CITY GOVERNMENT

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WELCOME.

City officials and friends of City Government are cordially invited to make the offices of City Government their headquarters during their visit in either city. Desks, stenographers and stationery are placed at their disposal, and their mail may be addressed in our care.

CONTENTS.

A Questionable Practice.

Some cities, for the purpose of inducing manufacturers to locate within their borders and thus enhance the city's prosperity, offer exemption from taxation for a period of five or more years. Such a practice is unlawful in most states, unjust to the taxpayer—especially the workingman,—strictly bad in principle, decidedly impolitic and unbusinesslike.

The revenues from taxation are employed in creating conditions which make it safe and profitable for such concerns to do business. While all citizens, irrespective of whether they pay taxes or not, are protectd in their rights by the strong arm of the law, protected from fire and receive freely the use of all other public benefits, there is no class which reaps as great a benefit as this same manufacturer. If he, the manufacturer, cannot afford to keep up his legitimate expenses he will be of no lasting benefit to a city. If any man is exempted from taxation it should be the laboring man struggling to pay for a modest home.

Extravagant Street Cleaning.

The city of Troy (N. Y.) affords a most striking example of extravagance in street cleaning. This little city with its 65,000 population and thirty-four miles of paved streets, paid in 1899, more than $90,000 for the cleaning of its streets and removing the snow. And even the expenditure of this large sum did not keep the streets clean, nor the cross-walks clear of snow much of the time in winter. The cause of the incompetency of the department is shown elsewhere in this number.

It is quite evident that political jobbery rules this city, and the wonder is that the several daily papers and thousands of good citizens, who are above this sort of thing, do not inform themselves and raise a howl that will be heard.

"A stranger from New Zealand," who became conversant with the facts would have good cause for deciding that it is a case of suspended animation, or, "it is not dead, but sleepeth."

To show the contrast between a live municipality and its opposite, we will refer to the city of Hartford, Conn. This city with its 77,000 population and ninety-nine miles of paved streets, paid for cleaning the streets and removing the snow in 1899, $39,350.69,—less than half the expense of the Troy department.

But this does not show the real contrast; that can best be seen in comparing the cost of cleaning per mile. Troy paid $2,646 per mile, while Hartford only paid $396 for similar work!

With such a state of affairs existing in the city, it should be a comparatively easy matter for Mayor Conway to inject enough of "business serum" into the veins of this antiquated piece of municipal machinery, to bring about the most startling and satisfactory results. The question is: will he see the opportunity and embrace it?

Grand Jury Will Investigate.

The financial troubles of Syracuse, like Bancho's ghost, will not down. A press dispatch states that Governor Roosevelt has issued an order directing a special grand jury to meet in Syracuse and investigate the deficiencies in the departmental funds of the city. Where there is so much smoke there must be fire. It strikes us that partisanship should be eliminated from the examination and, also, that Mayor Maguire and his party organ should render every possible assistance to those making the investigation.

If the owner of a manufacturing plant wished to investigate the work and methods of his Superintendent it would look very suspicious, and give good grounds for an investigation, if the Superintendent called his employer all sorts of names and retarded the investigation to the full extent of his power.

It is to be assumed that Mayor McGuire's administration is not guilty of any criminal irregularity, of course, but it would add to the Mayor's credit if he would change his attitude. It is wiser to court the investigation of our enemies than it is to malign them and impute bad motives to them.

Quaker City Economy(?).

In another column is given a brief account of Philadelphia's auxiliary pipeline for fire purposes. Mayor Ashbridge is to be commended for his zeal in providing so necessary an adjunct to the fire department, but his recommendation to Councils to accept the extravagant estimate submitted by the water bureau opens the way for severe criticism. His judgment and business sagacity are seriously questioned.

When so reputable an organization as the Fire Underwriters' Association, after investigation and consideration,—asserts that the proposed improvement can be made for $350,000 it demands more serious consideration than is given to it by the Mayor. It is inconceivable that there can be a good reason for so wide a difference as shown between the two propositions: the Mayor's for $700,000 and the Underwriter's $350,000. There is little doubt as to which plan will be accepted. Philadelphians are too apathetic and docile to the party lash to even question the wisdom of such remarkable economy!

Ventilation for Public Buildings.

The circumstances surrounding the recent death of Deputy Attorney-General John H. Coyne of New York state, afford a forcible and striking example of the need of better ventilation of public assembly rooms.

It has been asserted that Mr. Coyne contracted the disease—malignant diphtheria—which ended his life, in Part III. of the Supreme Court in New York city. This court room is illy-ventilated and most foul. It has come to be known as the "pest room." Some time ago the justices of the Supreme Court, not desiring to risk their health, refused to hold court in the room on this account and its doors were locked. Later, careless officials, without bettering the conditions, allowed the Gardiner hearings to be conducted there by Mr. Coyne. The poor ventilation plus the exhalations from the human bodies present made the court room a veritable "Black Hole of Calcutta." The continuous inspiration of vitiated air for three weeks undermined Mr. Coyne's health and made him a ready victim to the wandering germs of disease.

The Health Commissioner of every city, town and village should be clothed with authority to analyse the air of all assembly rooms, to inspect the provisions for ventilation and to order such changes as may be found necessary to correct the evil.

PERSONALS.

—Mayor Flood, of Elmira, vetoes Sunday base ball in that city.

—John E. Connell is the new Democratic City Clerk of Toledo.

—Robert A. Smith, Democrat, has been elected Mayor of St. Paul.

—William Gray, Democrat, has been elected Mayor of Veedersburgh, Ind.

—Colonel Vonti has succeeded Mr. Ryan as street commissioner of Toledo.

—George W. Burnside was elected Mayor of Sioux Falls, South Dakota, on the reform ticket.

—The friends of Mayor J. A. Armistead, of St. Petersburg, Fla., are urging him to become a candidate for the Legislature.

Mayor Robinson of Portland, Me., is to be commended for his efforts to secure a proper inspection of the milk sold in that city.

—The Rev. Dr. Washington Gladden, recently elected an alderman to the council of Columbus, is now being talked of as a candidate for Congress.

—Mayor Gould of Melrose, Mass., recently vetoed a curfew ordinance which came up for his approval. He took the ground that it would make criminals.

—"Mayor James Moir," says "The Times" of Scranton, Pa., "delivered a most interesting and scholarly lecture on 'Robert Burns,' before the local teachers' institute."

—Toledo is considering the nomination of Joe Quong, a Chinaman, as alderman from the Thirtenth ward. The suggestion was first made by a wag and just in fun has been pushed along.

—Health Officer Youngman of Williamsport, Pa., has been an exceedingly busy official this spring. He has examined 127 dairies furnishing milk to the city of Williamsport. These dairies, in the aggregate, have 1,267 milch cows. They are scattered all over Lycoming County.

—Joseph P. Phillips has been appointed City Engineer of Scranton, Pa., for a third term. "The Tribune" says of the appointment: "It is generally admitted that Mr. Phillips has been one of the most competent city officials Scranton has ever had, and no department is freer from cause for criticism than his has been."

—The Rev. Dr. Gladden, who was recently elected a member of the Columbus Council has his hands full of committee work. He has been made chairman of the committee on gas and electricity, and assigned to other committees as follows: water works, fire department, railroads and viaducts, and sewers and drainage.

—Mayor R. C. Ford, according to an exchange, made an attempt on Sunday, April 22, to run the town as he thought Christ would run it. On his orders every saloon, barber shop, butcher shop, feed-store, fruit stand and cigar stand was closed. Drugstores were permitted to sell only medicine. A large part of the city's population went without a shave and others went without necessities and comforts.

—Fred Wilke has been elected President of Beecher, Ill.

—Louis L. Smith has been elected City Solicitor of Lansdown, Pa.

—Alexander Murdoch is the new City Engineer of Reading, Pa.

—Samuel O. Boyce has been chosen City Solicitor of Wheeling, W. Va.

—Barton Youngman has been chosen City Engineer of West Hazleton, Pa.

—Mayor Blessing of Albany has bought a new horse and he proposes to investigate quickly and personally complaints from citizens.

—Thomas R. Wickenden has accepted the position of engineer on Toledo's park board at a salary of $2,000 per year. His work will commence with the boulevard.

—Charles E. Rowe has been re-appointed secretary of the Dayton water works. The city is to be congratulated upon retaining the services of so efficient an official.

—Mayor Gorman of Kenosha, Wis., comes out strongly, in his annual message to the Council, in favor of municipal ownership of the lighting and water works plants. He, also, favors a compensation for all franchises granted.

—Mayor Taggett of Indianapolis is talked of as Chairman of the Democratic National convention. Senator Gorman of Maryland, is advancing his interests in the East, while his many friends in the West feel confident of his selection.

—C. J. Strobel has been appointed Superintendent of Music of Toledo. The office was recently created. Mr. Strobel is the first occupant. He will have complete charge of the evening concerts that are planned for the summer in the various parks.

—H. W. Robinson, treasurer of Winsted, Conn., should be awarded the medal of honor for promptitude in issuing his annual report. The fiscal year of his city closes on May 1st, and on the 5th a copy was laid on the Editor's table. This record has never been equaled.

—City Comptroller Kerfoot of Chicago has designed special form-sheets for rendering a full account of the daily cash transactions of the office. At the same time they will serve as permanent records, as it is intended to bind them together in one volume.

—E. M. Johnson, Comptroller of Indianapolis, issues an annual report which, for conciseness, has few equals. At the same time it is comprehensive enough to answer any question which may arise relating to the city's receipts and expenditures, excepting the petty accounts.

—John J. Somes, City Clerk of Gloucester, Mass., has issued the finest manual which has yet come to the editor's table. It has a morocco cover with pockets, which makes it exceedingly handy for those using it. There are seventy-two pages filled with a fund of useful information relating to the city of Gloucester.

—City Clerk Susdorf has issued the manual of Buffalo for 1900. The manual is neatly bound and printed, and is filled with interesting data and statistics concerning Buffalo. The Pan-American is well advertised on the front cover and inside. There are also interesting articles on the proposed new steel plant, Fine Arts Academy, the development of the Erie canal, the Merchants' Exchange, the Bureau of Conventions and Industries and other features of Buffalo's remarkable progress and development.

South Dakota Elections.

Pierre.—James Hall was elected Mayor; J. J. Fletcher, Treasurer.

Aberdeen.—John E. Adams was elected Mayor. It is reported that every city official is a Republican.

Redfield.—H. P. Packard was elected Mayor on the Republican ticket.

Vermillion.—H. E. Hanson, Republican, defeated the Citizens' candidate for Mayor.

Madison.—C. J. Porter was elected Mayor by the Republicans.

Plankinton.—Carl Furchner, Democrat, defeated the Republican candidate for Mayor.

Parker.—A. L. Peterman was elected Mayor.

Sturgis.—Henry E. Perkins was elected Mayor by the Republicans.

Dell Rapids.—Henry Robertson was elected Mayor by the Republicans; M. A. Dieson, City Treasurer.

Mitchell.—E. B. Van Alstine defeated a fellow Republican in the contest for Mayor.

California's New City Officials.

Pasadena.—A. S. Lacey was elected Marshal; Herman Dyer, City Clerk; James Campbell, Treasurer.

Colton.—James Waters was elected City Clerk; George Burrall, Treasurer; Thomas Adkins, Marshal.

San Luis Obispo.—W. G. Johnson was elected Marshal; George W. Robbins, City Clerk; A. F. Fitzgerald, Treasurer.

Vacaville.—Edward Fisher was elected Treasurer; E. Donaldson, Marshal; R. B. Suitt, City Clerk.

Willows.—Thomas Kincade was elected Marshal; G. C. Johnson, City Clerk; C. R. Wickes, Treasurer.

Redding.—George M. Fisher was re-elected Marshal; E. L. Bailey, Treasurer; J. R. McDonald, City Clerk.

Modesto.—N. D. Young was re-elected Marshal; W. A. Harter was elected City Clerk; James Johnson, Treasurer.

Lakeport.—H. V. Keeling was elected City Clerk; Frank Howe, Treasurer; J. E. Mitchell and R. E. Barry had an equal number of votes for Marshal.

Calistoga.—M. Murphy was elected City Clerk; C. H. Nash, Marshal; N. Conner, Treasurer.

Pacific Grove.—T. A. Work was elected Treasurer; M. B. Norton, City Clerk; E. B. Rich, Marshal.

Monterey.—A. Gunzendorfer was elected Treasurer; W. E. Parker, City Clerk; D. Hernandez, Marshal.

Sonoma.—G. H. Cornelius was elected Treasurer; James H. Albertson, Marshal; J. B. Small, City Clerk.

Antioch.—R. H. Wall was elected City Clerk; G. Meyer, Treasurer; C. E. Sweeney, Marshal.

Anaheim.—N. F. Steadman was elected Marshal; E. B. Merritt, City Clerk.

Auburn.—Lee E. Wallace was elected City Clerk; A. S. Waldo, Marshal; A. L. Smith, Treasurer.

Santa Cruz.—Dr. J. P. Parker was elected Mayor; J. L. Wright, City Clerk; F. W. Lucas, Treasurer.

San Mateo.—James R. L. Wallace was elected Marshal; R. H. Jury, City Clerk; John H. Doane, Treasurer.

Redwood.—D. R. Stafford was elected City Clerk; L. P. Behrens, Treasurer; John Christ, Marshal.

PERSONALS.

—William C. Hamilton has been re-elected City Clerk, of Bayonne, N. J., for three years at an increased salary. "The Herald" of that city says of him:

"Mr. Hamilton has the city's business at his finger's ends, and, like his prototype, 'Uncle' David T. Valentine, so long city clerk of New York, is a walking encyclopedia of facts, figures and conditions of the city government. He is an assiduous, experienced and energetic public servant, and we trust that the municipality may for many years enjoy the benefit of his valuable services."

—Thomas Magner has been re-appointed Street Commissioner of Bayonne, N. J. In referring to it "The Herald" of that city remarks:

"For the limited means at his disposal Street Commissioner Thomas Magner has during his term of office wrought marked improvement in the city's thoroughfares, particularly in the cross streets, many of which have been made presentable and substantial with the single dressing, a method which was adopted at Mr. Magner's suggestion."

Press Comments on Municipal Affairs.

Model Tenements.

The agitation for improved tenement houses in the crowded districts of Pittsburg has now taken practical form, and the project begins to assume a business-like aspect. Pittsburg, in proportion to its size, may be as well off as most cities in its accommodation for those whom the movement is intended to benefit, but one needs only to glance about certain quarters and to recall the result of recent police investigations in Basin alley to be convinced that there is a necessity for radical improvement.—"Times," Pittsburg.

Bird S. Coler for Governor.

It is a pleasure to observe that there is a disposition on the part of the Democracy of New York to nominate Comptroller Bird S. Coler for Governor. He shines forth from his political environment in New York city like a jewel in a muckheap. He has shown remarkable intellectual and financial ability, and with it a degree of civic courage not exceeded by that of his probable Republican opponent, Governor Roosevelt. Probably of the two Coler has the larger grasp of mind. His nomination would be not only strong and wise politics, but under the circumstances a compliment to Roosevelt. The State would get a fit Executive no matter which party should be indorsed at the polls.—"Record," Philadelphia.

Municipal Morality.

Granting the impossibility of the complete extirpation of those vices which generate in cities, including gambling, pool-selling and other allurements of chance, which impair the honesty and destroy the principles of their devotees, the fact is indisputable that their repression is one of the duties of municipal government.

The decent people of this city demand, of right, that every energy of their government be exerted against dives, gilded or otherwise, whether above ground or below, and against every form of gambling obnoxious to the law, and therefore the proper subject of government objection and destruction.

Any form of vice can exist only by the collusion or indifference of the city government.—"Press-Post," Columbus.

A Costly Experiment.

According to the "Morning Democrat" published at Carthage, Mo., the loss on the municipal light plant at that place has been $2,787.20 for the three months, January, February and March. This is at the rate of $11,148.80 a year and this loss the city suffers in return for 175 incandescent lights and 25 arc lights! There is no reason why a city should not operate a municipal electric light plant as well as a corporation, if it will only hire economical, honest, skillful and trained men for the purpose and see that the business is as carefully conducted as any well managed business establishment. But how is that going to be effected in the City of Leavenworth any more than in Carthage, Mo.? The government here is in the hands of a self-seeking gang of politicians. A light plant would be conducted extravagantly, carelessly and with a view to finding the most places and dollars for the political crew.—"Times," Leavenworth.

National Ownership of Railroads.

Some time ago the "Messenger" incidentally suggested that, in the years to come when possibly government ownership of railroads shall be a fact, some historian will point back to the creation of the inter-state commerce commission as the first assertion of the national prerogative of control. It is interesting to observe the gradual drift of events toward that result. An amendment to the inter-state commerce law is now in the routine of the Senate, authorizing the commission to establish a uniform national classification of freight. All men who have had experience in this matter realize the perplexity and the frequent injustice and discrimination resulting from the diversity of freight classifications in use by the railroads. Some attempt was made to improve the situation several years ago by the introduction of the official classification, but its adoption was practically confined to trunk lines east of the Mississippi and not all of them.

The establishment of all means of transportation and communication throughout the country under national control is as certain as the future that shall see it.—"The Messenger," St. Albans, Vt.

Franchise Granting.

The granting of franchises to corporations by cities is a matter of a most serious character for justice should be done the city and injustice should not be done the corporation. There are corporations which ought not to be permitted access to any city except under severe restraint while others result in sufficient benefit to a city and its people to be favored under lenient conditions. A corporation which proposed to bring manufacturing interests to a city belongs to the latter class. If it succeeds in doing this it increases business, adds to population and in various other ways is a benefit, some time more of a benefit than any per cent. of earnings that it may agree to pay into a city's treasury.—"Tribune," South Bend, Ind.

Municipal Musings.

Municipal ownership long ago passed out of the stage of theory and experiment if in fact it ever belonged there. Centuries before America was discovered public ownership of public utilities was highly developed. The City of Rome two thousand years ago possessed its splendid public baths, its superb aqueducts and other utilities owned and managed by the government. In Germany to-day the railroads are owned by the government, and all over Germany the municipalities own and operate street railways, lighting plants, water supplies, etc. In England municipal ownership has been highly successful. In France there are numerous examples of the kind. In many cities of the United States the plan is working with excellent success. Why cannot Kingston be successful too?—"Express," Kingston, N. Y.

The Whole Question.

Dr. Washington Gladden, recently elected a member of the City Council of Columbus, defines his position on one of the live questions of that city, the regulation of street railways, as follows:

"I believe that a straight 3-cent fare—perhaps with a transfer rate of 5 cents—would enable the company to pay a good interest on what the road and its equipment have actually cost. They could not probably with that rate pay interest on the fictitious capital which they have issued; but it is not just that the users of the road should be taxed to pay interest on this kind of capital. The company ought to have a fair remuneration upon its actual investment, no more. We want to confiscate no man's earnings or savings; we want every man, capitalist or laborer, to have his rights; but we want no man to be given legal power by the city to tax the rest of us to pay interest on watered stock."

Dr. Gladden's statement of the street car question takes in the whole corporate issue. Ought public franchises and other legislative grants to be used to make the people pay interest or dividends on fictitious capital?—"Dispatch," Pittsburg.

The Smoke Nuisance.

As regards the abatement of the smoke nuisance, says "The Press" of Grand Rapids, Mich., "were it merely a question of obliging the general public the Aldermen would undoubtedly at once and unanimously order the fires blown out and the chimnies razed. Unfortunately there are some other matters which complicate the problem. The city must have factories, the factories must have power, power cannot be generated without the consumption of fuel, and apparently a reasonable economy requires the use for fuel of soft coal. Yet there are contrivances which, if they do not wholly abate the smoke nuisance, greatly mitigate it. They are in more or less successful operation in other cities, and are even said to effect a saving of fuel. Were the Grand Rapids factories compelled by ordinance to use them it would be no great hardship and the city would be a much more agreeable place of residence. It is to be hoped, therefore, that the council in response to the women's ptition will take up the matter and that the manufacturers will co-operate with it in framing an ordinance which without being oppressive will be reasonably effective.

By orders of the street committee of the Paynesville, O., council tin and cardboard signs advertising plug tobacco, yeast, soap, etc., are being torn down from telegraph and telephone poles about town.

More than 2,000 have already been removed. The action is taken under a hitherto unenforced ordinance.

Convention Dates.

Secretaries of Municipal Associations, Civil Engineers' Societies, Fire and Police Conventions, Electrical Associations, and of all other associations relating to any phase of municipal work will confer a favor on "City Government" by sending dates of annual and quarterly gatherings for record under this caption. The Editor would, also, be pleased to receive advance copies of all subjects discussed.

MAY.

18-24.—National Conference of Charities and Correction, Topeka, Kan.

JUNE.

5-6.—Pennsylvania Four-County Firemen's Association, Stroudsburg.

5-6.—The American Park and Outdoor Art Association's annual convention, Chicago.

8.—Maryland State Firemen's Association, Baltimore.

12-13.—Western New York Volunteer Firemen's Association, Lockport.

12-14.—Minnesota State Firemen's Association, Winona.

12-14.—North Dakota Firemen's Association, Larimore.

13-15.—Maryland State Firemen's Association, Baltimore.

19-20.—Jefferson County (N. Y.) Volunteer Firemen's Association, Clayton.

19-20.—Hudson Valley Volunteer Firemen's Association, Peekskill, N. Y.

JULY.

2-7.—American Society of Civil Engineers, Institution of Civil Engineers, Great George street, London, England.

3-4.—Oneida County Association of Active and Exempt Volunteer Firemen, Boonville, N. Y.

18-19.—Tri-County Volunteer Firemen's Association of Western New York, Waterloo.

AUGUST.

1-2.—Maine State Firemen's Association, Gardiner.

16.—The general meeting of the American Institute of Electrical Engineers, to be held in Philadelphia on May 16, will adjourn to meet in Paris in joint session with the British Institution of Electrical Engineers.

28.—American Society for Municipal Improvement, Milwaukee, Wis.

SEPTEMBER.

22-26.—National Prison Association, Cleveland, O.

25-27.—International Association of Municipal Electricians, Pittsburg, Pa.

26-28.—Virginia State Firemen's Association, Richmond.

OCTOBER.

1-5.—American Public Health Association, Indianapolis, Ind.

2-5.—Pennsylvania Firemen's Association, New Castle.

9-12.—International Association of Fire Engineer's, Charleston, S. C.

DECEMBER.

12-15.—League of American Municipalities, Charleston, S. C.

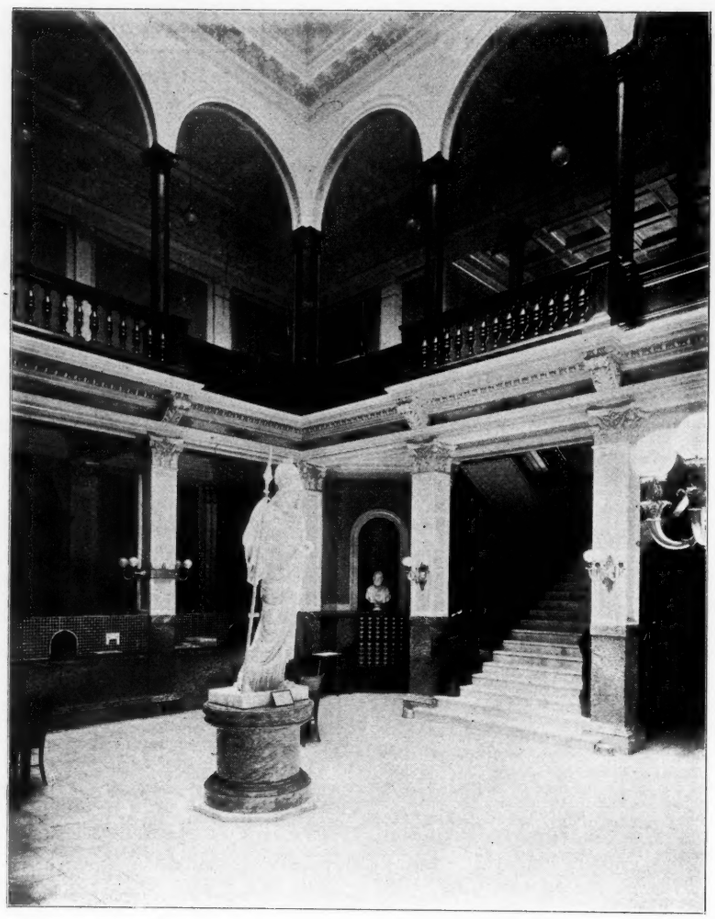
Progressive Ordinances.

The Council of Binghamton, N. Y., recently turned out the following bunch of sensible restrictive ordinances:

"Article 2, title 3, making it unlawful for any person or firm to paint, print or mark with paint or any substance upon any sidewalk of the city any words, figures or advertising device, under penalty of $5 for each offense.

"Section 2, article 4, title 3, providing that no awning, other than of cloth, so hung as to be seven feet in the clear above the surface of the sidewalk, shall hereafter be placed above any walk of the city. This act is not to apply to ornamental wood awnings, constructed in front of hotels, etc., for which permission may be granted by the Council.

"Section 3, article 4, title 3, making it unlawful to hang any sign over the sidewalk a distance of more than three feet, except as the Common Council may, by resolution, permit the erection of ornamental electric signs, placed at least fifteen feet above the walk, and securely fastened at both ends."



ROTUNDA OF ERIE PUBLIC LIBRARY.

The Erie Public Library.*

Through the leadership of the Board of Education of the city of Erie the taxpayers have become owners of one of the most beautiful libraries in the country. The initial steps were taken ten years ago and the consummation of the effort was realized at the dedication on February 16, 1899.

The accompanying illustrations give some idea of the beauty of the building. The cost of the grounds and building was as follows:

Site	$17,521.80
Architects' fees	5,784.44
Construction	110,442.54
Heating	2,700.74
Plumbing	595.37
Sidewalks and grounds	1,528.77
Furniture and fixtures	10,013.53
Total	$148,587.19

The library building is conveniently located almost in the business heart of the city, and but a moment's walk from the post office and the City hall. It is also favorably situated for plenty of light and air, fronting on East Park, with French and Seventh streets on two sides.

One of the most beautiful public buildings in Pennsylvania, it is a structure of two stories, with a basement, in the classical style of the Italian Renaissance. The general dimensions are 86 x 144 feet, with a height of 54 feet. The base is granite, extending to the first floor window sills; the body is of vitrified Pompeiian brick, of brown effect; the cornice, roof-balustrade, Corinthian pilaster capitals, and window trimmings of white terra cotta. The entire porch on the Park front is of white Georgia marble, with Ionic capitals. From the portico there leads a main entrance, through a vestibule and corridor, into the main rotunda. Vestibule, corridor and rotunda are tiled with Tennessee marble, and the corridor and rotunda are wainscotted with Verte Campan marble. The routnda occupies the center of the building, extending to the roof, with an arched gallery on the secon floor, and terminating in a sky-light. The green marble wainscotting, rich mahogany wood-work, and harmonious color decoration touched with gold, form a combination the effect of which is most beautiful.

Into the rotunda open the various reading rooms and offices, and on the side next the stack-room is the delivery desk. The stack-room, 75 x 43 feet, is well lighted from three sides and has a capacity of 150,000 volumes. All the woodwork of the library, excepting that of the entrance and rotunda, is quartered oak.

The librarian took charge June 1st, 1898, and from that time the work of selecting, purchasing, and catloguing, with the hundreds of details incident to the systematic formation of a modern library went steadily on. When the library was dedicated and thrown open to the public, Feb. 16th, 1899, nearly 10,000 volumes were on the shelves, and printed finding lists as well as the type-written card catalogue were ready for use.

*Prepared from data furnished by the Librarian and his associates.

The appreciation on the part of the public of the benefits of a free public library was immediate and generous, not to say overwhelming. The number of volumes drawn for home reading during the first full month, March, was 14,605; and this with less than 10,000 volumes on the shelves and only 2,500 names on the borrowers' register! The great interest manifested at the outset was but a promise of the steady and growing patronage which the library has enjoyed ever since. The total circulation for the first year was 138,877.

Donations to the library have been many and valuable, including interesting historical and local relics; and there is significance in the fact that the donors of books are so numerous that their gifts amount to nearly one-tenth of the total number of volumes in the library, now over 18,000.

In purchasing books, the Book Committee and Librarian have constantly aimed to secure "the best reading, for the greatest number, at the least cost," and have tried to build up the various classes according to the probable demand and in proportion to the importance of each, providing with works of the more serious sort for the needs of teacher and student, while bearing in mind that a large percentage of the patrons of the library depend upon it for entertainment from lighter literature.

As the manufacturing interests of Erie are very large, especial attention has been paid to works on engineering, electricity, machinery, and the useful arts in general, and the constant calls for books in these classes have been a most gratifying proof of the wisdom of this course.

Works of reference and bound periodicals are placed on open shelves for free public access, and are available to any who come to the library. There are also received and kept on file in the reading room 26 newspapers and 132 periodicals.

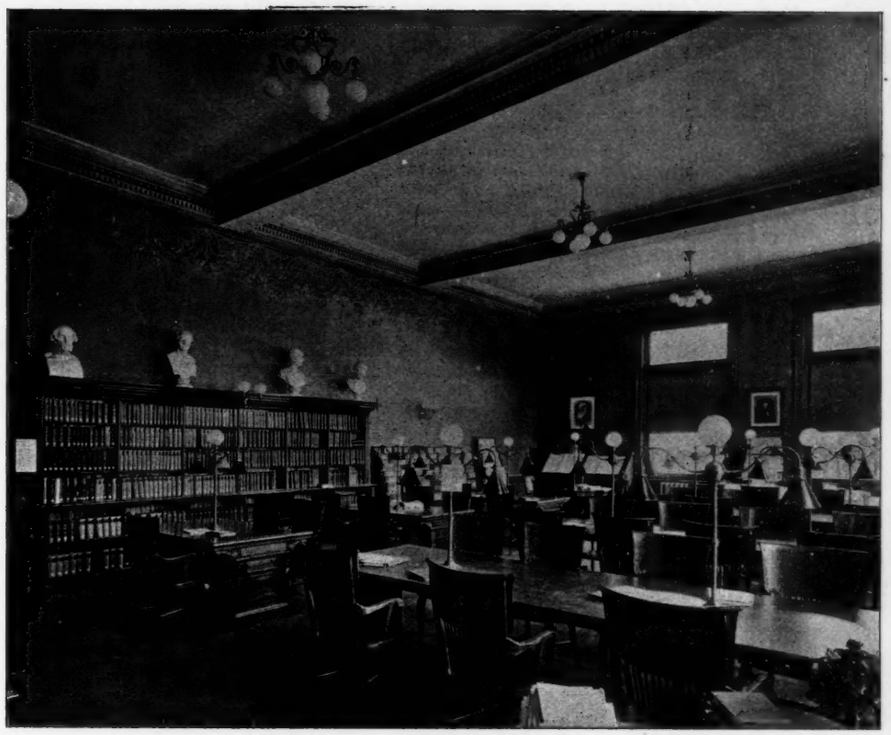
The plan of having a children's room, separate and distinct from the main library has proven so admirable wherever tried that its wisdom, in most cases, is undoubted. Our own library has proven no exception to the rule, and the children's room has been, from the day of opening, one of the most thoroughly appreciated and heartily approved features that we have. The room is well lighted, with tables and chairs smaller than those in the reading rooms for the "grown-ups," and with books shelved in open wall cases, giving the young reader an opportunity to select his book by personal examination of its contents. One good result of this arrangement is shown by the fact that the proportion of fiction circulated from this department is considerably less than in the main library. Of the 8,000 registered borrowers now holding library cards, one-third have children's cards, which are given to all applicants under sixteen years of age. The proportion of volumes circulated from the children's room is also about one-third of the whole.

The second floor of the building is occupied by the various offices of the Board of Education, handsomely furnished in quartered oak and olive-green, enameled steel; by four small rooms, as yet unused; and by an art gallery, women's assembly room, and lecture room.

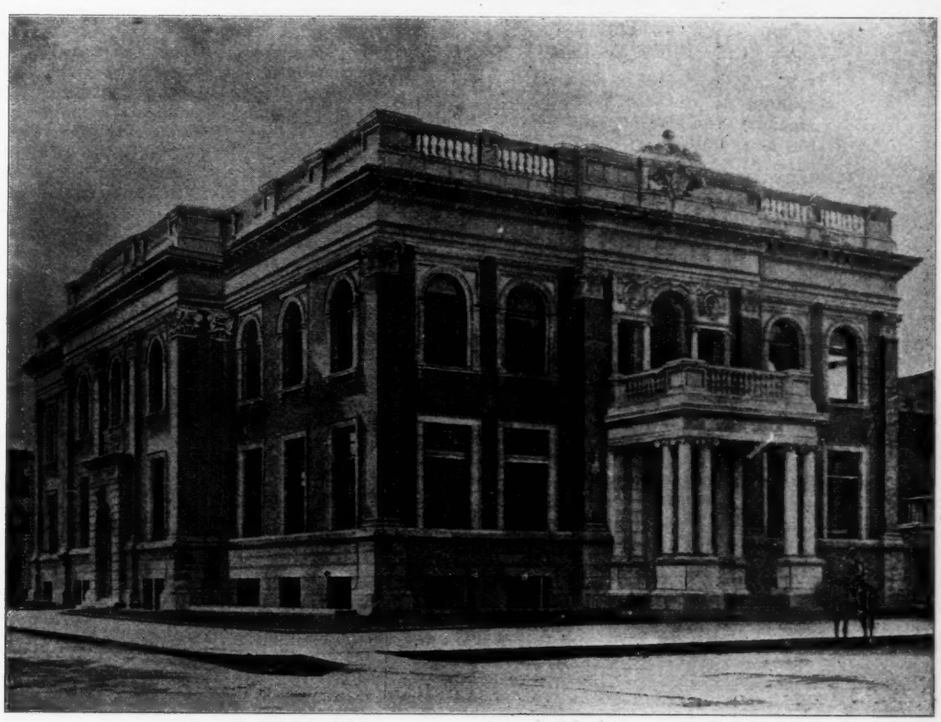
The art gallery, occupying the center front, is 27 x 43 feet, and lighted from an arched sky-light which forms the ceiling. When the library was opened the Art Club of Erie secured from New York a fine collection of fifty oil paintings by the foremost American artists, and for six weeks these were on exhibition, free to the public.

A year later another exhibit, this time of water-colors, was given under the auspices of the same club. As one result of these exhibitions two oil paintings and five water colors, including work by Mr. H. Bolton Jones and Mr. F. Hopkinson Smith, have been purchased for the Gallery through the generosity and public spirit of our citizens, and form a very creditable nucleus for the larger collection which will some day fill the Gallery. In this connection mention should be made of the many busts, statues and statuettes which adron the Rotunda, reading rooms and Art Gallery. These beautiful works of art, copies of ancient sculpture, are the gifts of a citizen.

The Women's Assembly room is a beautifully decorated apartment, 43x21, and has been handsomely furnished in



GENERAL READING ROOM, ERIE PUBLIC LIBRARY.



THE ERIE PUBLIC LIBRARY.

colonial style by the Women's Centennial Committee. It is used for the regular and special meetings of various women's clubs of the city which are non-sectarian, non-partisan, and non-charitable in their organization.

The lecture room is of the same dimensions as the Women's Assembly room, fitted up with platform, reading-desk, chairs, and an electric stereopticon of the best make, this last the gift of a generous citizen. During the past winter a course of free lectures upon popular subjects has been given, and has been well attended and highly appreciated.

The library museum in the basement is contained in two well lighted rooms, 42x28. The nucleus of the collection consisted of the remains of a Natural History Society, and the residium of a private collection in the rooms of the Y. M. C. A. The whole was in the utmost confusion, and when arranged in something like order sparsely filled ten double showcases and a wall-case of 30 feet in one of the above rooms. Gifts were so numerous that in less than six months the second room, with duplicate cases, was occupied. At present both rooms are crowded, and additional accommodations will soon be provided. The collection is one of great variety, and is made up entirely of voluntary contributions.

The unflagging interest of the children and their efforts to contribute to the exhibits are noticeable. This is particularly true of those of the poorer classes.

The number of visitors which in March, 1899, was but a dozen daily had increased in January, February and March of this year to 245, 244, and 241 respectively.

City Work Without Pay.

The Mayor-elect of Kansas City is confronted at the outset with a depleted treasury, the former administration having been unboundedly extravagant in its expenditures. Under this condition, according to "The Star," J. L. Woods Merrill, a public-spirited citizen, offers to assume management of the street-cleaning department in Kansas City free of charge. He pledges himself to as faithful a performance of this task as if he were on the payroll, and, in fact, he is likely to do the work much more thoroughly, as he will be working for fame and from philanthropic motives and not for mere pelf. "The Star" suggests that the same idea may be followed by the Mayor in making other appointments, and it calls upon other business men with time to sacrifice free of cost for the benefit of their fellow-citizens. It is not likely that the offer will be accepted, but it opens new possibilities in city administration. The money saved by the appointment of Mr. Merrill, for instance, will pay for several laborers in the department over which he presides, and hence will be of aid in keeping the streets of the city clean. It is not likely that the Kansas City idea will find many imitators.

Opposed to Lobbying.

City Engineer Brown will not permit lobbying with the powers that be in the interest of certain varieties of material furnished his department. And when he speaks about such a matter it is with no uncertain sound. A recent disregard of his wishes called forth the following announcement:

"To all Employees and Inspectors:—It has come to my knowledge that certain employees of this department have been lobbying in the interest of different brands of material; also interesting themselves in the awarding of contracts and other legislation not affecting themselves.

"This practice must be stopped at once. Any disregard of this order means discharge, without a hearing. Yours very truly,

WILBUR F. BROWN,
"City Engineer."

A New Charter for Minneapolis.

The charter revisers of Minneapolis have completed their work and submitted their report. "The Times" of that city, speaking of it editorially, says:

"The fatal vice of charter builders appears to be an overweening desire to do too much. The last charter commission did so very very well that its works follow it and nobody follows its works. The present charter commission gives promise of producing something as vast as its predecessor and fully as unsatisfactory. But it is playing more loudly to the galleries and for this reason it may attract more votes. This is not to say that the charter about to be submitted will not be a good one, but the people it is to be feared will not swallow so large a dose of reform as the charter commissioners propose to give us all at once, so to say.

Of late the charter-makers have been busy upon schemes to establish pension systems for teachers, policemen and firemen. A short while since they were fixing the price of gas, electric light and telephone service. Before that they had in view a massive and intricate system of civil service reform. Many of the things proposed by the commission are commendable but few of them are necessarily the subjects of initial debate in a charter fight. The people asked first home rule and receiving this through the medium of a charter commission they possibly reserved to themselves the right to legislate upon some of the subjects which the charter commission proposes to settle off hand. The principle of home rule could have been established in twenty-four hours by the re-enactment of the present charter with one vital amendment, viz: the separation of city and state elections. This would have given the people a base from which the home rule campaign might be fought to an issue on several lines. Moreover it would have put the charter before the people in such a way that there would be no question of its adoption at a special or general election.

But the commission has chosen the other road. It is intrenching and fortifying as it proceeds. Its lines are long. It has its strong and weak places. It is open to attack on kopje and in valley and naturally the enemies of charter reform will converge their fire on the weak spots. On the other hand the commission is rallying forces to its aid that the previous charter commission did not enlist, but in the very act of doing so the commission exposes a motive. It is making a charter that will carry at the polls, not a charter that must of its own merit carry at the polls. The people are not so factionally torn on the charter question as to need such a document. Indeed they are not so vitally concerned in a charter at all as to be compelled to take one which may be but sounding brass to attract different groups of voters. What the people want is to obtain control of their own charter making. They do not necessarily obtain it from the aid of fifteen men attempting to discount the entire future by settling a priori problems that are the proper subject of the referendum.

Gentlemen of the charter commission, give us home rule. Give us general and accepted principles of government if you will, but do not overload your document with fads and isms because they make it look pretty."

General Items.

The Board of Trustees of Le Roy, N. Y., has purchased for the use of the town, two voting machies from the Standard Voting Machine Company of Rochester.

* * *

Director of Accounts L. H. Cott of Columbus, O., writes that: "Through an error of a clerk in the Legislative department we have been compelled to go to the Supreme Court to test the validity of the bicycle and vehicle license tax act passed on April 9th. We hope to have a decision at an early date.

* * *

The city of Chicago has passed an ordinance requiring owners of apartment houses to remove ashes at their own expense.

Corporation Counsel Ellis of Cincinnati has given a decision that, under the provisions of an ordinance passed June 28, 1869, the city is required to remove ashes from "flat" houses.

* * *

Sacramento, Cal., started a crusade against the obtrusive bill-board several months ago. Cleveland then commenced a war against them, and now Chicago has opened her broad-side. The latter because of the extent of the nuisance, has been dubbed "The Smeared City," and it proposes to get rid of the name, if energetic action will do it.

* * *

Wife-beaters and habitual drunkards are to be assigned to the most unpleasant work at the bridewell. John Sloan, superintendent, of Chicago, has ordered prisoners convicted of such offenses to be assigned to the garbage crematory during the hot days. This crematory is now working day and night, consuming twenty-five to thirty tons of refuse daily.

* * *

The street and water commissioners of Jersey City have adopted a resolution requiring the removal of all signs before June 1. All signs that project beyond the building line must be taken down. Barber poles and like signs set in the ground are included in the order. Permits for the erection of signs were heretofore issued by the Street and Water Commissioners but no permits will be issued in future.

* * *

Commissioner Cantine, of Albany, N. Y., after a careful inspection, says he does not approve of the municipal lodging house of which Syracuse boasts and is operating with success. Men are furnished lodgings for two weeks at a time and are given employment on the street. The commissioner said it attracts an undesirable class of the hobo specie and would likewise prevent Albanians from obtaining employment on the streets.

* * *

Mayor Maguire of Syracuse has written the first veto of his present term of office. It is in opposition to an ordinance adopted by the Common Council calling for proposals for the construction of the Brighton avenue trunk sewer. The Mayor objects to restriction of the material. The ordinance calls for brick or National Web Tile. The Mayor holds that makers of other kinds of web tile are not to be kept out of the competition.

It is Now Greater Troy.

The city of Troy, (N. Y.) under the administration of Mayor Conway, is putting on new strength and new territory. In one jump its population has risen from 65,000 to 85,000. This was brought about by an act of the Legislature, proposing to unite Lansingburgh, with its 15,000, and portions of the villages of Brunswick and North Greenbush, with 5,000 population. The union was strongly opposed by many of the residents of Lansingburgh, but the more progressive element prevailed and the bill was signed by the Governor on April 26th.

For years the municipal water service has literally been a stench in the nostrils of the people. Moreover it has been a constant menace to the public health. The water has been and now is unsafe for drinking purposes. Mayor Conway's election was carried largely on the water issue, he promising to provide a pure water supply during his administration.

The initial step has been taken, the passage of an act of the Legislature, authorizing the expenditure of $1,250,000, to procure pure water for the city of Troy, having recently been secured.

The Lansingburgh water works—also a municipal plant—proposes to expend $105,000 upon the improvement of its water supply.

The methods, or rather the lack of methods, hitherto employed in the administration of the affairs of the city, are so primitive and inadequate, not to say criminally careless, that the Mayor has a large sized contract on his hands to straighten out the affairs of the various departments. He will be deserving of great credit if he even makes a good beginning toward correcting some of the irregulaities. To give examples of the looseness with which the affairs of the city have been conducted,—which continue in many instances,—a typewriter was, within a few months, stolen from the Police department and its whereabouts have not yet been found. There have been no reports issued from the various departments, excepting the treasurer's and controller's for years; and it is utterly impossible to obtain an exact accounting of the street cleaning and several other departments.

The street cleaning department is fit to become the laughing-stock of the country. Its employees are all old men, most of whom have not sufficient strength to do a day's work, who are employed, it is said, to prevent their becoming charges on the poor fund. Their feebleness can be better appreciated when it is stated that up to the first of May many of them still continued to wear their overcoats, they being unable to keep warm enough by their own work without them! And Troy's climate is not particularly severe, either. A little reflection will show that these men could be easily maintained by the saving which would be effected by putting the department on a business basis. It was charged of the previous administration that this department was filled up with a lot of incompetents for the sole purpose of getting their votes and such others as they might influence. Mayor Conway will have to correct this evil, or be liable to the same charge. At present the expense of the street cleaning department is enormously extravagant, even when based on a liberal estimate for hand sweeping. The present cost is, as nearly as the total can be arrived at, more than $90,000. On a liberal estimate the same work could be more thoroughly done by able bodied men at half that expense, still using the hand system; and, if a combination of hand and machine work were used, it could be done for one-third that amount. These are contractor's figures and allow for a fair profit on the year's work.

There is a splendid opportunity for Mayor Conway to make a record for himself in this city and it is earnestly hoped that he will accept it thereby benefiting himself and fellow-Trojans.

Tax on Telephone Poles.

An increase of at least $250,000 a year to Chicago's income from corporations is projected in an ordinance which an alderman has drawn up. The ordinance provides that all telephone and telegraph companies not now taxed on their gross income for the city's benefit shall pay to the municipality $5 a year for each pole used by them. Where wires are laid underground the ordinance provides for a compensation of 15 cents a foot a year. The investigation which the alderman has directed shows that neither the Western Union nor the Postal Telegraph companies pay the city of Chicago a cent in compensation. The poles of these corporations and others, too, occupy the streets and alleys, and the wires cover the city with a network. The Chicago Telephone Company cannot be reached by the measure, as this concern is now taxed.—Exchange.

The Mayor's Cabinet.

Mayor Nichols of Wilkesbarre, Pa., has inaugurated an innovation which it might be profitable for those similarly situated to follow. The city charter made no provision for a cabinet, nor was it prohibited, and, therefore, he organized and operated one last year. The membership of the cabinet consists of the chief of police and his sergeants, street commissioner and his assistants, water inspector, building inspector, health officer, sanitary officer, superintendent of fire alarms, superintendent of police alarms, meat inspector and the Mayor. Regular meetings are had in the roll call room of the police force every Monday evening next preceding the regular meetings of Councils.

The plan was so successful in its operation that it will be continued.

Toledo's Water Works Report.

The net income of the Toledo Water Works Department during the past year, is $7,680.85 over any previous year, which is a splendid showing. The annual report just issued shows that there has been collected for water rents a total of $133,176.64. The total receipts from all sources is $149,545.47, and the operating expenses (which include pumping expenses) $40,932.93. Deducting the operating expenses from the water receipts, leaves a net total of $92,243.71.

Besides this there has been turned over to the sinking fund trustees, $33,000 and $145.70 for interest. During the year 747 new meters were set, 53 new taps added to the service, and 701 put into service, making a total service for the city of 11,136 up to the first of April. There has been 154 miles and 383 feet of new cast iron pipe laid, to each four miles and 1,749 feet laid last year, 36 new hydrants have been set, and every department of expense shows that the water works people have been very busy in making necessary improvements for the city.

—The Comptroller of Detroit, F. A. Blades, has compiled, for the especial use of the Councilmen and other city officials, the estimates as submitted for the fiscal years of 1898, 1899 and 1900, showing the amount in detail required for conducting the several departments of the city government; the appropriations allowed for the fiscal years of 1898 and 1899, and the itemized expenditures of the departments for the fiscal year of 1898, and the first six months of the fiscal year of 1899. The book also contains a tabulation of the appropriations for and expenditures of each fund, commission and board of the municipality, annually from 1880 to 1898, both years inclusive, as shown by the annual reports of the departments.

Concessions for Franchise.

In these days it is a slow town that does not exact many concessions from a corporation seeking a franchise of any kind. South Bend, Ind., has just granted a twenty-five year franchise to an Electric Light and Power Company. The provisions of the ordinance are as follows:

"By the provisions of the ordinance the company is given the right to use the streets, alleys and bridges of the city for the purpose of maintaining its lines, poles and conduits for a period of twenty-five years. It has been agreed that in so far as possible the company shall use the alleys in place of streets. The city is to have the free use at all times of any or all poles for the purpose of conveying electrical wires for fire or police alarms, and the city reserves the right that at any time after four years the company may be required to place its wires under ground.

"The company is required to deposit $1,000 in cash with the city treasurer, which shall be forfeited in the event of failure to deliver at least 1,000 horse power of electric current by December 1, 1901, and a $5,000 bond must be furnished to indemnify the city against any suits that may arise from the existence of the company's wires and poles. The company agrees to pay to the city on January 1 of each year 3 per cent. of its gross receipts for the year previous and the city treasurer has the right to inspect the books of the company at any reasonable time.

"The clause which is of most interest to the general public is that limiting the rates the company may charge for power. The provisions in this respect are that the maximum charge shall in no case exceed eight cents per thousand watts for light and five cents for power not exceeding five horse power; (4) cents in excess of five and less than 10 horse power; three cents per thousand watts up to 30 horse power and no charge to exceed this amount for 30 horse power for a working day of ten hours. The company agrees not to consolidate with any other company furnishing electric light, heat and power."

Wide Tires Coming.

The State law passed several years ago by the Legislature authorizing cities and towns to require wider tires on wagons, will be taken advantage of by Atlantic City (N. J.) for the protection of the newly-paved avenues upon which the city has expended in two years over $200,000.

Councilman David R. Barrett, a member of the Street Committee, has taken the initiative in this very proper step forward, and will endeavor to secure the enactment of an ordinance that will require at least four-inch tires on all vehicles. It is Mr. Barrett's opinion that the ten-cent busses in the course of a year with their narrow tires do far more damage to the new macadam drives than the total amount of tax paid by all of them combined will repair.

The new State law has been taken up in nearly all of the towns in the upper section of the State, famous for their well kept roads and streets, and it has been found that the results have been beneficial. Atlantic City will either have to do something of the kind proposed by Mr. Barrett or expend thousands of dollars every year in repairs.

Ottawa's Cheap Light.

The Superintendent of Lights of Ottawa (Ill.) in his annual report makes the following brief statement concerning the cost of the lights:

"The cost of the system to the city during the year was $5,170.07. There are 140 lamps in all, costing the city $27.47 per lamp, and a total cost of $37.47 per lamp, including salaries and all other expenses during the year, and since the plant was installed but $31.52 per lamp per year."

The Pros and Cons of Public Ownership.
Discussion Solicited.

Government Telegraph and Telephone.

Canadian cities have long been in the lead in many matters pertaining to municipal operation of public utilities, as compared with other American cities. And now Mayor Macdonald of Toronto starts the ball rolling to obtain government control of all telegraph and telephone lines. He has brought about the adoption of the following resolution by the Council of his city

"That this Council do petition the Parliament of Canada, at its next session, to pass an act to authorize the Honorable the Postmaster General to acquire all the existing telegraph and telephone lines and systems, and make such extensions to and operate the same in connection with and as part of the postal system of Canada, or, in the alternative, to construct a new system or systems of telegraph or telephones and operate same as aforesaid; and that the co-operation of the cities, towns and municipalities of Canada be asked to the end that an act may be passed for the purpose aforesaid."

In a letter to the Editor of "City Government" he says

"The resolution was unanimously adopted by the Toronto City Council on the 2d of April, when I caused copy of it to be forwarded to the Honorable the Postmaster General of Canada. I have also written the municipal Councils of the various cities and towns in the Provinces of Ontario and Quebec, urging them to pass similar resolutions. As yet the Minister has simply promised to give the matter his 'best consideration.' I am, however, in hopes that action will be taken by the government, and that my efforts will not be void of results."

Water and Light Without Cost.

Contrary to the experience in many other cities in Ohio, municipal ownership in Wapakoneta, O., has proved a remarkable success, and in a few years light and water may be free of cost to the citizens. For over four years now this city has owned both the waterworks and electric light plants, and so well have they been managed that, counting as receipts the average rental paid for street arc lamps and fire hydrants in other places, the two plants have netted over 13 per cent. on the investment. The plants cost a total of $92,000, and bonds bearing 5 per cent. and 6 per cent. interest were issued for the full amount. Combined they have netted to the taxpayers the past year the sum of $7,163 over and above interest on the entire issue, or nearly 8 per cent., while excluding interest the sum would be increased to $11,983, or more than 13 per cent.

Each of the seventy-five street arc lamps have cost for the past year, after deducting all receipts for incandescent lights, etc., only $28.18. This cost is decreasing each year, and as the receipts are continually growing it is safe to predict that the time is not far off when the town will be well lighted without the need of a tax levy. Likewise water for the fire plugs and city purposes will be free of cost to the taxpayers. The only need of a tax levy at present is for the payment of outstanding bonds and interest. Two thousand and four hundred incandescent lights are now in use in the village and 80,072,778 gallons of water were pumped from the waterworks station the past year.

Columbus' New Light Plant.

The "Capital City" of Ohio is to own its lighting plant. The Council recently took action looking forward to that event by preparing to ask for an issue of bonds amounting to $200,000. Director L. B. Kauffman, in a letter to "City Government," says:

"The project has not, as yet, advanced far enough for me to give you any particulars with regard to the matter, but the plant will, in all probability, be one having a capacity for two thousand nominal 2,000 c. p. arc lights. We shall probably employ an expert electrical engineer to submit plans and specifications for the plant, and shall hope to have it ready to go into operation when our present contracts expire, which will be in September, 1901."

COST OF ELECTRIC LIGHTING.

The Following Items Were Gleaned From Our Exchanges: We Cannot Vouch for Their Accuracy.

PRIVATE OWNERSHIP.

Racine, Wisconsin.—Population, 27,000; pays $98.50 annually for each arc lamp.

Pomeroy, Ohio.—Population, 5,500; pays $89 per year for each street arc lamp. Coal, 87 cents per ton.

Danville, Illinois.—Population, 16,000; pays $80 per arc lamp. Coal, 60 cents per ton.

Waukesha, Wisconsin.—Population, 8,000; pays $78 per arc lamp.

Lebanon, Pennsylvania.—Population, 18,000; pays $104 per arc lamp. Coal, $1.65 per ton.

Big Rapids, Michigan.—Population, 5,200; pays $41 per arc lamp. Water power is used.

Waterloo, New York.—Population, 20 000; pays $83.12 per arc lamp. Water power is used.

Fulton, New York.—Population, 5,000; pays $60 per arc lamp.

Dallas, Texas.—Population, 50,000; pays $100 per arc lamp. Coal, $3.75 per ton.

Vincennes, Indiana.—Population, 12,000; pays $96 per arc lamp. Coal, 65 cents per ton.

PUBLIC OWNERSHIP.

Decatur, Illinois. —Population, 27,000; pays $50 annually for each arc lamp.

London, Ohio.—Population, 5,000; pays $57.58 per year for each street arc lamp. Coal, $1.81 per ton.

Hannibal, Missouri.—Population 16,000; pays $40.79 per arc lamp. Coal, $1.40 per ton.

Marietta, Ohio.—Population, 8,273; pays $44.50 per arc lamp.

Logansport, Indiana.—Population, 18,000; pays $24.44 per arc lamp. Coal, $1.65 per ton.

Brainard, Minnesota.—Population, 9,701; pays $12.50 per arc lamp. Water power is used.

Bangor, Maine.—Population, 20,000; pays $59.04 per arc lamp. Water power is used.

Niles, Michigan.—Population, 5,000; pays 25.48 per arc lamp.

Galveston, Texas.—Population, 50,000 pays $70 per arc lamp. Coal, $4 per ton.

Bowling Green, Kentucky.—Population, 12,000; pays $56.03 per arc lamp. Coal, $1.28 per ton.

Favors Public Ownership.

Mayor Keifer of St. Paul in a recent public address declared himself in favor of public ownership and a few other things of a similar character. He said in part:

"The city should receive an income for franchises it has the power to grant. Some cities do so in this country, and European countries are particularly well off in that direction. The new charter allows the city to do its own paving and other municipal work, whereby a saving of 33 1-3 per cent. may be saved to the tax payers. Under the new charter provision is made for municipal ownership of lighting plants and municipal control of the street sprinkling work. From 50 per cent. to 60 per cent. can be saved on lighting alone."

ATTITUDE OF MUNICIPAL CORPORATIONS.

A NEGATIVE VIEW OF PUBLIC OWNERSHIP—NOTABLE FAILURES MENTIONED. *

By John G. Boyd.

In several instances when the writer was selling and erecting electric light plants throughout the country, he was asked his opinion of the feasibility and desirability of municipal ownership, he seldom had but one reply to make to the query and that was this: "Do you, sir, realize that when you cast your vote for municipal ownership that you have in effect mortgaged your property by the proposed issuance of bonds from the sale of which is to be derived the funds to create such an enterprise by virtue of the fact that you will have to pay interest on those bonds and provide a sinking fund for their final payment?" We all understand how the disciple of municipal ownership, in his presentation of the so-called merits of his scheme, represents how municipal ownership will reduce the cost of these commodities and the undertaking is entered upon with enthusiasm. In the first few years the showing and the balance sheet certainly appear attractive; then as extraordinary repairs become necessary, the negative era is entered upon, and the longer the industry is operated—the harder the taxpayer is hit by the increased taxes.

Toledo has had some experience in owning public industries and the balance sheet is interesting reading. She has built what is known as the Woodville Railroad—It cost the city $448,000, and the city sold it to the Pennsylvania Railroad Company for $225,000, leaving a red ink balance of $223,000. The city borrowed $232,000 of the original cost and gave her bonds bearing 7.3 per cent. interest, payable in thirty years. The bonds will become due this year, when due, the city will have paid $946,080 in interest and the principal will have to be carried along until the present generation shall have bequeathed to posterity both the debt and municipal problems.

The city borrowed $1,500,000 to go into the natural gas business. This enterprise has paid $100,000 gross to the city but not one cent of interest, which is running at the rate of $67,500 per annum. By the time the natural gas bonds are due the city will have paid over one-half million dollars in interest on the earnings of $100,000 received, and will leave the taxpayers burdened with an additional debt of one and a half millions. The city has recently refused a cash offer of $256,000 for it and has enterd into a contract with a New York syndicate for the manufacture of fuel gas to supplement the natural gas supply. It is only fair to state that the advocates of the municipal ownership excuse this failure on the ground that the natural gas supply became exhausted or nearly so—a disaster which no foresight could provide against. It should also be state that a competitor under private ownership in the same field has made the business profitable and is still paying dividends. Toledo also owns its own waterworks—financially this has been a fair success and affords a great contrast to Toledo's other business investments. Its service, however, is not such as would be tolerated were it conducted by a private corporation.

We, of course, all know that the United States Post Office Department exemplifies a most striking example of public ownership and with the United States treasury behind it, it is enabled to continue business at the old stand 365 days in the year, but at an average daily deficit to the taxpayers of the United States of between $40,000 and $50,000, notwithstanding many of the items figuring in the balance sheet of a private corporation are omitted from the government's annual report, which, were they included, would probaby raise the daily net deficit to seventy or seventy-five thousand dollars.

The city of Cincinnati furnishes a most notable instance of the fallacy of municipal ownership of industrial undertakings by the sinking fund trustees of that city having accepted a bid of $19,000,000 for the sale of the Cincinnati Southern Railway.

A few years ago the Detroit, Mich., plant was held up as a monument of economic administration, and the cost of production was juggled so as to show the cost per lamp-year to be $84.96, being some $48.36 cents lower than the preceding private contract, yet James I. Ayer, ex-president of the National Electric Light Association, together with other respected authorities, easily proved the actual cost of production to have exceeded the private contract price.

To get a little nearer home with an illustration we can dwell a moment over the gigantic municipal investment at Austin.

As a result Austin is practically bankrupt or expects to be according to the statements appearing from time to time in the doubt but that the monthly balance sheet the local papers there is hardly room for shows a red ink balance on the wrong side of the ledger of some $8,000, and that the tax rate has been increased over 150 per cent., but it has (or had) a municipal plant. Texas bankers and financiers with whom the writer has conversed on the matter, seem to feel that it is only a question of a short time before the city of Austin will become bankrupt through this monumental example of the "Attitude of Municipal Corporations to the Public."—Street Railway Journal."

*Abstract of paper read before the Southwestern Gas, Electric and Street Railway Association, Waco, Texas, April 12-14, 1900.

A MUNICIPAL FAILURE IN BOSTON.

CAUSED BY PARTISAN METHODS AND LACK OF CIVIL SERVICE REGULATIONS.

The April issue of "City Government" had an interesting account of a municipal success in Boston—its Printing Plant—and to even the balance one of its failures is shown up. All public ownership enterprises are not successful, but wherever there is a failure it is due to incompetent management. And that is directly chargeable to the account of the partisan politician, who insists that the city's affairs should be conducted in the interest of the machine instead of the people. Chief Electrician Brophy makes out another clear case, showing the unprofitable stewardship, so far as the peoples' interests are concerned, of the party boss.

Mayor Quincy with purest intent created a new department several years ago known as the "Electrical Construction Division. The plant took root and rapidly grew to large proportions. Upon assuming control Mayor Hart, Mr. Quincy's successor, began to take stock and so among other things called for an unbaised report from Chief Brophy concerning this department, which is rendered in no uncertain terms. He says:

"A glance at the pay rolls shows that nearly 60 per cent. of the men whose names it contains were appointed at the request of certain prominent gentlemen, who to say the least are not the best judges of the necessary qualifications of the employees of this department. Electrical contractors employ only a sufficient number of men to meet the requirements of their business. Not so with the head of this department, for when in his judgment the force should be reduced owing to a lack of business, he meets with a most decided opposition from the friends of the men whose services sound business principles prompt him to dispense with; in nine cases out of ten the men selected for dismissal because their services are not required, owe their appointment to some active politician high in the councils of his party, who sees to it that his friends are retained regardless of the city's interest or the condition of its treasury. As a result of this unwarrantable interference men are kept on the pay roll whose services are not needed, and others who never should have been employed.

"Discipline which is so necessary for the success of any establishment, cannot be maintained in this department so long as a large percentage of its employees can retain their position, not through any effort of their own but to party exigencies. They can bid defiance to any rules or requirements formulated for the government of the employees; there is no incentive for them to strive to give an honest days' work for a liberal days' pay; they are as a rule breeders of mischief, destroyers of discipline and murderers of time. With such material as this, no man, be he ever so competent, can successfully compete with private concerns in the field of electrical construction for the city of Boston. No competent self-respecting man can remain at the head of this department and be compelled to retain against his judgment men who are incompetent, indolent and insubordinate. The salaries paid all employees should attract the very best class of men in point of intelligence and workmanship, but owing to the so called system of patronage (which some people are uncharitable enough to call plunder) this class is crowded to one side to give place to the followers of the party workers."

* * *

"Much electrical work has been done in the past that was not necessary, and attempts were made to do more. One notable instance of the kind I personally prevented which I will here call to your attention. His Honor, Mayor Quincy, was led to believe that the condition of the wiring in the new Court House was such as to endanger the building and cause its destruction by fire; and considering it his duty to prevent such a calamity, he sent a demand to the judges of the court that the building be rewired by the Electrical Construction Division. Had they yielded to this demand, one and possibly two years' work would be furnished for this division. Having had some experience with it, they looked with some degree of consternation on an invasion of the building by the division. The custodians of the building appealed to me through the Commissioner of Wires to examine and make an electrical test of the entire equipment. It was made and resulted in showing that not only was the building safe from destruction by fire due to imperfect wires, but that there were very few buildings of the same size where the lighting system was in as good condition and as safe electrically. The only motive for attempting to impose this unnecessary expense must have been the employment of a force of men, a large portion of whom could be safely classed as 'camp followers,' who 'toil not, neither do they spin'—if they can help it."

* * *

The chief gives numerous instances where the cost of the work performed by this department is from one and a half to two times as much as it would have been if performed under the contract system. As to the quality of the work he remarks:

"A personal examination of the work done by the Electrical Construction Division convinces me that it is up to the best standard, and the records of the Wire Department show that but very few defects have been found by its inspectors."

* * *

Continuing Mr. Brophy lays bare the causes which have led to the failure:

"I find that the electrical construction division has in its employ a number of first class men, but they have been hampered in many cases by alleged helpers. Each of these men require one helper, yet they are often burdened with four of these misnamed helpers. But while many of these latter cannot be classed as faithful workers in the electrical field, I suppose they are useful in some other, and receive their reward through the medium of the pay roll of this division. Thus adding to the expense of all the work done by it."

* * *

"I have never looked upon this new arm of the municipal service as being desirable or necessary, yet in common with every other good citizen, once it was organized I hoped for its success. I saw its humble start with a desk in the office of the Wire Department, and its removal to an office on the first floor of the old Court House with workship in the basement thereof. I witnessed from a distance the rush for employment in it, resembling somewhat the mad rushes to newly discovered gold fields. To the politicians who are little else than employment brokers for their constituents and followers, the off-scourings of the electrical wiremen of Boston, and those knowing nothing of electrical wires but possessing an extensive knowledge of an entirely different class of wires, this department did prove a gold field.

"Among the many who were employed were some few very good men who secured employment on their merits, one of whom was placed in charge of the equipment of one of two public buildings that were exactly alike; and he distinguished himself by completing the same within the figures named by an outside contractor. The other building was placed in charge of one whose services were not eagerly sought for by any reputable firm, and who was appointed to a position in this division through the 'influence' of a member of the city council, a near relative of his. He finished the equipment of the building under his charge for $600.00 above the contract price—a dead loss to this division which had to be made up from some other source.

"The early experience of the various departments with this division did not inspire them with a burning desire to employ it again, and lack of business compelled a reduction of the force of employees. Among the first to be discharged was the one man who finished the work assigned to him within the contract price. The man who had an opportunity to do likewise and did not, was also discharged, not for his failure (which does not seem to be considered an offence) but for insubordination; but he was reinstated 'because of the evil and potent influence behind him.' This latter reason, however, was not the one assigned to the head of this division."

* * *

"So far as my investigations go, I can discover nothing that this division has yet done that can be offered as an excuse for its existence. You can if you will make it what it should be. But will your successor do likewise? Probably not."

—Hamilton is giving Ohio cities an object lesson in municipal ownership. The annual report of Superintendent John Lorenz, just issued, show that the gas works earned a net profit, above all expenses and interest, last year, $6,975.99. The electric light plant cleared $3,219.14, and the waterworks, which is under a separate superintendent, as much more. In addition the properties are valued at $600,0000.

Fulton's Municipal Venture.

For some years past the water question has agitated the minds of the citizens of Fulton, N. Y., the majority being in favor of municipal ownership secured either by purchasing the plant of the Fulton Water Company or by constructing a new water works.

Early in 1898 a citizens' committee engaged the services of Mr. William R. Hill, now chief engineer of the New York Aqueduct Commission, and instructed him to prepare an estimate of the probable cost required to duplicate the existing plant of the Fulton Water Company. The result of Mr. Hill's investigation in the matter proved that the water plant could be duplicated at a cost of $115,000.

Later on, Mr. Hill was requested to act as an arbitrator to name a proper price that the village of Fulton should pay to the Water Company for its plant. Mr. Hill advised the citizens that he should not be appointed inasmuch as he had already named a price at which the water plant could be duplicated, and he recommended that they should select some person who had never had any previous connection with the project. The Water Commissioners and the Water Company, nevertheless, agreed upon the appointment of Mr. Hill. Associated with Mr. Hill in his work, as arbitrator, were Mr. William Wheeler, C. E. of Boston and the Hon. Charles Andrews, late chief justice of the Court of Appeals.

The sum of $172,500 was named by the appraisers as a fair and reasonable price that should be paid for the water works.

The proposition to purchase the plant at the above named price was submitted to the citizens at a special election held in the spring of 1899, but was defeated at the polls.

After the defeat of the proposition to purchase the water plant, the Water Commissioners endeavored to negotiate directly with the Fulton Water Company. The value of the plant was then fixed by the company at $200,000 and they refused to sell at a lower figure. The proposition to purchase the plant at the increased price was submitted to the people and accepted by them at a special election held on April 28, 1900, by a vote of 245 for and 164 against.

Public Ownership in London.

In the course of a few weeks the first electric street car to run in London will make the journey from Westminster bridge to Tooting, and from that time electricity will supercede the horse on the line between those classic localties. This is only preliminary to a project on the part of the city of London—which owns this line—to making the same change on all the sixty-eight miles of "tram-lines," as they are called, which the city not only owns, but manages, a change which, it is estimated, will cost in the neighborhood of $15,000,000. Parliament's consent to this transaction will be asked by the London County Council in the course of the present session, and as soon as it is obtained—for there is no doubt that it will be—the work will be undertaken at once.

It seems rather surprising that such a really remarkable change should have received as yet so little attention, but the war is partly responsible for this. Moreover, it is only natural that the public should have lost sight of other municipal enterprises in the excitement which has been stirred up by the sudden determination of the post-office to tear up over four hundred miles of London streets and lay therein an underground system of telephone communication that will be the property of the city and entirely under its management. This system will cost $10,000,000, and its completion will mean a revolution of telephone charges and rentals in London.

Within the last few months deputations from America have visited the London parish that has not only invented and installed a plant that makes common house garbage light its streets and shops, heats its public baths and libraries, and supplies hot water for its wash houses, but has also taken a long stride toward solving the housing problem.

It may be pointed out, furthermore, that electric trains will be running underground in London before New York has much more than made a beginning on her proposed rapid transit tunnel. In many ways this old town is now coming rapidly to the front.

PUBLIC SAFETY.

Fire.

Auxiliary Pipe Line for Fire Fighting.

Mayor Ashbridge of Philadelphia has submitted to Select and Common Councils, and caused to be referred to the Committee on Water, for public hearing of the parties most interested therein, the very important and interesting plan prepared by the Chief of the Water Bureau, under his direction, for the construction and maintenance of a water supply for extinguishing fires in the congested sections of the city. Indeed, he submitted alternative plans. The preferred one is for a pumping station on the city's old gas works site, at Filbert street, on the Schuylkill river. This system would cost $702,539 to construct. The other is for a pumping station at Market street, Delaware river, and this would cost, exclusive of the site that must be purchased, $625,975.

The cost of maintenance for either system is estimated at $12,950 a year.

A most interesting feature of the Mayor's communication, however, is his statement that a committee of the Fire Underwriters Association recommends a plan, the execution of which would cost less than one-half as much as the Mayor's. But the Underwriter's plan Mayor Ashbridge considers absolutely impracticable.

Chief Hand explains in his report that by the proposed plan the quantity of water available is the delivery of twenty streams of 500 gallons per minute, of 10,000 gallons per minute, which is equivalent to 14,400,000 gallons per 24 hours at a pressure equivalent to a head of 520 feet on the pumping machinery, and to a head of 440 feet on the most distant fire hydrant in the system, and that it is in excess of any water supply in use to-day for fire purposes alone.

For such high pressure rolled steel pipe instead of cast iron is required, and it will cost twice as much as the latter. Chief Hand continues:

"It is proposed to use steel pipe connections to the fire hydrants and to design, if possible, a fire hydrant which shall be flush with the pavement, and which shall have one, two, or three hose attachments, so arranged that one, two or three streams can be used from the hydrant at the same time.

"It is proposed to place the hydrant at the corner of each intercepting main street and one or more near the middle of the square, at the corner of an intermediate street or strets.

"This will provide from 12 to 16 fire hydrants for each square, and from 32 to 48 hose attachments, all of which could be concentrated on one building in an emergency."

—At a recent morning fire in Yonkers, N. Y., one of the fireman while searching for guests, found a box of valuable jewelry, which some guest had left behind. Richard Grant, of the Tuckahoe department, found a wallet containing about $4,000 in banknotes. He said he gave it to the owner, but received no reward, not even a "thank you."

Indianapolis Fire Department.

A year ago the Editor of "City Government" visited Indianapolis while on a western trip. He took the opportunity to inspect, among others, the fire department. Judging its efficiency from standards long accepted by those best informed upon the subject, he declared the department inadequate to the needs of the city and recommended the erection of a new central station in addition to other improvements. At that time the Editor so stated the case in an interview in "The Journal," but was severely criticised and his statements were questioned by the Editor of "The Sentienl." It affords "City Government" some satisfaction, even at this late date, to have the opinion of its editor supported by an expert upon fire matters.

W. H. Johnson, who recently inspected the Indianapolis fire department for the National Board of Fire Underwriters, has has submitted his report, and it has been approved.

He recommends the establishment of a new central fire station, additional firemen at each of the present stations, a new company at Cerealinetown, a new company in the vicinity of Morris and West streets, a new company at Ash and Twenty-fourth streets, additional apparatus for some of the old stations, additional street reservoirs, larger water mains in the business district, additional fire hydrants protective shutters in the business section, and that inclosed bridges across alleys be prohibited.

The recommendations, it is agreed by city officials, amount to a reconstruction of the entire department at an enormous outlay of money. While no action with reference to rates for insurance has been taken, it is understood that they will go up unless the city acts on the recommendations of the inspector.

Chief Barrett confirms the report of this expert even as he did the recommendations of the Editor of "City Government." He said that "The report recently rendered was satisfactory to him and met all the requirements of the situation. All the things mentioned in the report, he said were not in his first recommendations, but since then he and the Board of Safety have talked things over and nearly every recommendation in Mr. Johnson's report has been discussed.

"The Board of Safety is now engaged in looking for sites for the new houses. The down-town house, if built, will probably be at Kentucky avenue and Maryland street. The Chief says that Mr. Johnson is undoubtedly right in recommending a new fire alarm system. Many of the old boxes are worn out and inadequate, he says. To put the system in proper repair it is estimated that about $10,000 will be needed, and the Board of Safety is now negotiating with fire alarm manufacturers.

"The Chief says the recommendation that iron bars on stone windows be abandoned is a good one. This, he says, would have to be brought about by city ordinance or by the insurance men themselves. The same, he says, applies to the prohibition of inclosed bridges to ware-houses in the rear of buildings, across narrow streets and alleys."

Fire Department Statistics.

The accompanying table of statistics is made up of information furnished directly by the chiefs of the several departments to the Indianapolis "News," and is, therefore, reliable. It will be of interest to other cities than those compared.

The nine cities are arranged according to the area, St. Paul having the largest, 56 square miles and Jersey City having the smallest, only 13. And yet it will be seen that the latter spends more for fire protection—having less than one-fourth the territory—than St. Paul.

The table furnishes other interesting contrasts and will repay a careful study.

FIRE DEPARTMENT STATISTICS

City	Area—sq. mls.	Population, 1899	Annual cost for Maintenance	Paid Men	Ave. Cost per man	No. of Houses	APPARATUS: Engines	Hose Wagons	Surface Trucks	Aerial Trucks	Water Towers	Chem. Engines	Other Apparatus	Total
St. Paul . .	56	170000	$200000	202	$990	20	15	16	6	2	1	5	-	49
Denver . . .	50	175000	141000	114	1236	12	7	14	4	1	1	-	3	30
Kansas City.	36	200000	186000	194	1010	17	8	13	5	2	2	1	-	34
Toledo . . .	30	140000	130000	131	992	15	6	7	3	2	1	3	8	32
Indianapolis	28	175000	176507	170	1050	22	9	21	5	1	1	3	-	40
Omaha. . . .	28	150000	210600	109	1932	15	4	12	4	-	1	2	-	23
Louisville .	21	216000	228585	201	1137	26	17	18	4	1	1	4	-	45
Rochester. .	18	160000	230000	200	1150	22	8	13	5	3	-	2	-	31
Jersey City.	13	200000	221500	183	1210	21	17	7	6	1	-	3	6	40

An Automobile Fire Engine.

A powerful addition to the fire-fighting force of Pittsburg will be provided when the city gets its new automobile fire engine. With the new water tower, which has already been ordered, the downtown section of the city will be as fully protected from disaster by fire as it is possible to provide in the way of equipment.

The power of the automobile engine is furnished by steam, and Director Brown is convinced that it is the finest thing out in the line of fire mechanism. He explained recently that the idea is to use it in responding to second and third alarms, and wherever there is risk of a conflagration. Until this type of an engine was produced the maximum amount of water and pressure that could be attained, was limited to the weight of the engine that two or three horses could handle speedily through the streets. In the self-propelling engine these limitations are obviated, for it can propel by its own power any reasonable weight.

Engines of this class in use in Boston and New Orleans weigh about 17,444 pounds each and their streams can be maintained for 48 hours. At a recent test of one of these engines, using 50 feet of 3 1-2-inch hose, there were ejected horizontal streams as follows: One and one-half-inch nozzle, 348 feet; three-quarter-inch nozzle, 338 feet; two-inch nozzle, 319 1-2 feet.

It is also maintained that the engine can be driven through snow or mud that would block the engine drawn by horses. A recent test in Boston demonstrated that the propeller could get out on the street in response to an alarm before the horses could be attached to another engine in the same building. The Director said that by using the full power of the engine in combination with the water tower a stream will be sent out that will reach any part of the highest building in Pittsburg.

Tests of Fire Retardant Materials.

With the report for March of the Boston Manufacturers' Mutual Fire Insurance Company is issued a report of tests of fire retardent materials, made by Prof. Charles L. Norton for the Associated Factory Mutual fire insurance companies. Some general statements can be drawn from the report which will be of value to those who apply fire retardents to structural uses.

The tests were two in number, occurring October 5, 1899, and February 3, 1900, respectively, and were made by lining a small wooden building with the several kinds of insulation that are used to protect wooden surfaces from fire, and building a fire of wood and oil inside. The ceiling and sides of the building were divided into panels designated by letters to facilitate reference to the behavior in the tests of the retardents with which they were lined. Following were the retardents applied: Wood, lath and plaster; Expanded Metal, furred with wood plastered; Sackett Wall Board, furred and plastered; the same without furring; 3-4-inch air cell, furred and plastered; same, without furring; asbestos air cell. After the first test the following results were found: Door ruined, wood, lath and plaster destroyed; Expanded Metal, Sackett Board, asbestos cell not injured. It was indicated that the furring of the Expanded Metal and the joints in the asbestos air cell would soon cause the destruction of those panels.

The second test, which took place on February 3, was made in a house similar to the earlier one, and with a view to a more prolonged test of the more resistant materials, including, also, the Clinton Wire Lath. There was also a standard tinned wood door, made by the Victor Manufacturing Company, of Newburyport; a Mississippi Wire Glass window in a steel frame, and a small door devised by Edward Atkinson. This door was composed of two thicknesses of spruce sheathing, covered with Sackett Wall Board, and tinned. The summary of the result of this test is as follows: Metallic lath panels well afire and nearly destroyed; asbestos air cell and Sackett Wall Board panels igniting in hottest places; hard pine panel not seriously weakened, especially where shielded by metal lath and plaster; neither door in danger of falling, and wire glass window in good condition. The report closes with remarks on both tests, from which the following is extracted:

The necessity of applying fire retardent materials in at least two thicknesses, so as to break joints, is indicated by the experience of the Asbestos Air Cell fire door. The relative showing of the two large doors shows the immense gain in using a three-ply door, the two-ply door warping and twisting, the three-ply door remaining flat and tight at the edges.

The Atkinson composite door showed a distinct advantage in that it was much more gas tight than the wooden doors.

Attention is called to the increase in charring back of the expanded metal, when fumed off, over the charring when nailed closely to the plank. It is clearly indicated that furring spaces back of fire retardents are not desirable. Partitions of 3-inch plank, protected by fire retardent materials in this test resisted a very hot fire for nearly one hour. Partitions of this kind may be of great service in many places where heavy brick walls cannot be constructed.—"The Weekly Underwriter," N. Y.

Annual Reports.

CHIEF HODGINS:

Marinette, Wis., reports that, during the past year the department turned out 103 times in answer to fire alarms. In responding to these alarms 590 miles were traveled and the department was actually engaged in the work of fire fighting 514½ hours. The actual loss by fires in this city during the year as paid by the insurance companies was $55,605.15.

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CHIEF POYNS:

Tacoma, Wash., had 164 alarms last year during 1899. The loss by fire amounted to $38,626.85, which was insured for $1,118,200, while the insurance paid was $28,186.86.

The department as a whole traveled 551 miles in responding to alarms; laid 31,600 feet of hose; raised 383 feet of ladders; used 153 gallons of chemicals, and worked 387 hours and 27 minutes.

Chief Poyns recommends the purchase of two chemical engines and one fire boat.

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CHIEF HAHN:

Ottawa's (Ill.) annual report of the Fire Department's work, as given by the Chief, showed 27 alarms, and two of them false. The convent and Gay factory fires represented 98 per cent. of the loss of the year. Over a quarter of a million dollars' worth of property was endangered, the loss was about $145,000, with insurance not quite $100,000. The expenses of the Department were $2,178.20, and the total cost, including the salaries, a little over $4,000. The apparatus is worth over $4,000, and the fire alarm system, with 18 boxes, worth $3,300, is included He recommended the purchase of a lot of hose and connecting the houses of the volunteer firemen with the alarm system.

Department Items.

—Charles M. Mayer has been appointed Chief of the Wapakonita, O., department.

—There is a movement on foot to so amend the firemen's pension law for Springfield, O., as to provide for the payment of a pension to firemen after a service of twenty-five years.

—We are informed that Mr. F. L. Ide, who formerly represented the Eureka Fire Hose Company from Boston, Mass., has not been in charge of its interests at that point since April 1st, and is no longer connected with the company.

—Chief Walker of the Scranton department is the right man in the right place. If Councils would heartily second his efforts as to regulations, discipline and the addition of adequate apparatus, he would soon have the department second to none in the State. It is gratifying to note that eight new horses are to be added to the service.

—Chief W. C. Norton says in his annual report of the Winona, Minn., department that there have been during the past year 149 alarms; for the previous year, 116. The loss by fire amounted to $51,334, the total amount of insurance on the property involved being $367,170. The Chief has asked for one new fire engine and one ladder truck. He is to entertain the State association next month.

—A cloud of bugs was responsible for the calling out of the Trenton (N. J.) Fire Department the other day. The bugs were gathered around the steeple of the Fourth Presbyterian Church in such numbers and at such a distance from the ground that a passer-by mistook them for smoke and sent in an alarm. When the Fire Department arrived on the scene, Chief Allen, with aid of a field glass, discovered the mistake, and the fire companies returned to their houses.

Salvage Corps Advocated.

For two years Chief Engineer John P. Quigley, in his annual reports, has suggested the establishment of a salvage corps in connection with the Fire Department of Syracuse. He has given facts and figures in several instances to show that such a corps would have saved more money at one or two fires than the aggregate amount of its running expenses would be for a year.

Contrary to expectations, the Chief has not advised that the corps be equipped and maintained or operated under the management of the fire insurance companies of the city. He has always held that its expenses should be borne by the city and that it should be made part of the paid department.

Albany has a salvage corps and Albany is a city of smaller population than Syracuse. It is operated under the direction of the insurance companies. The corps saves more at any single large fire than the amount of its annual expense, it is said, and it has given thorough satisfaction since its establishment.

Chief Quigley's idea in having his suggested corps connected with the paid department is to prevent any possible friction arising between the two. That might always be looked for, he says, so long as one was maintained independent of the other.

The Chief says that the aggregate expense of a salvage corps in Syracuse would not exceed annually $8,000 after the first year. The cost of fitting up a house and equipping it would be the most important feature, he thinks.

A good company could be formed with six of the picked men of the department, the Chief said. In a year or two the company might be increased to eight or ten men. Under the supervision of a Foreman and the Chiefs of the department all perishable goods could be covered up on the lower floors of burning department stores or such and there would scarcely be any water damage to speak of, save on the floor in which the fire was confined.

Department Items.

—A recent test of the salt water fire service of Boston gave abundant satisfaction. Fitted with the modern accessories it is no longer an experiment.

—Superintendent Ira Read, of the fire alarm telegraph of the Columbus, O., department, has completed plans for replacing the present gravity cells with storage batteries.

—Fire Commissioner Scannell has ordered that all large apartment houses shall be equipped with fire alarm boxes, while the crowded tenement is left to the mercy of the nearest alarm box on the street.

—Chief McAfee, who has just completed a four-year term, has been re-appointed by the members of the Board of Fire Commissioners, who assure the Chief that he will remain in office as long as they do.

—Assistant Fire Chief Louis Behrens Charleston, S. C., has just completed a three weeks' course of study in methods and equipment of New York's well equipped department. He speaks in the highest terms of the New York force.

—Joseph G. Schuler, Chief of the Fire Department of Wilkesbarre, Pa., was married on April 24 to Miss Lulu Hartman, of that city. Nuptial mass was celebrated in St. Nicholas' Catholic church by Rev. Father Nagle. Chief Schuler is one of the best known firemen of the Keystone state.

Fire Department Items.

—Harry P. Maguire is the newly appointed Chief of the Pottsville, Pa., department.

—P. V. Hoy has been chosen Chief of the Fire Department of Norristown, Pa. Chiey Hoy succeeded John Slingluff when the latter was killed in a wreck at Exeter. He is a well known fire fighter.

—April 23 was the "Gala Day" of the fire department of Peoria, Ill. Chief Carl Moeller and the members of the Pension Board were made extremely happy by the results of the annual ball. It was not only the most brilliant affair ever given by the department, but the most successful when measured by financial results—fully $1,500 will be realized.

—The city officials of Indianapolis, Ind., are alive to the necessity of having all overhead telephone and telegraph wires that are liable to interfere with the work of the fire department removed or placed underground. Chief Barrett says that such wires should be removed where they will not conflict with the erection of fire apparatus, and wires that cross streets or alleys should cross at the top or three feet above the top of the buildings.

—With a record of 75,734 fires, a fire loss of $153,597,830, and an insurance loss of $92,683,715, the twelve months of 1899 stand as the year of greatest waste by fire, with the exception of 1893, for the last twenty-five years. The record for twenty-five years, as compiled in the Chicago "Chronicle" fire tables, now shows $2,738,784,216 represents the values burned. The amount distributted in insurance in twenty-five years aggregates $1,605,382,243, and the difference between the fire waste and the insurance loss amounts to $1,133,401,973, nearly 42 per cent.

Police.

The Police Problem at Havana.

Considerable discussion has grown out of the recent killing of an American by a Cuban policeman. The American, it appears, was in liquor and attacked the policeman, taking away his club. Thereupon the policeman shot him dead.

The policeman, a youth of nineteen, was promptly discharged from the force by Chief Cardenas on the ground that he was not fit for such service, but the question still remains as to whether such young and inexperienced persons should carry revolvers.

Under the Spanish regime the police worked in pairs, thus rendering less likely a recourse to firearms. Many members of the present force are of slight physique, and would probably be unable to arrest a person without the moral support of firearms.

Chief Cardenas says: "If the physical requirements of the police force are made more stringent it may prove very difficult and perhaps impossible to get men who are up to the standard. There would also be a great outcry, owing to the fact that only Spaniards and Americans, as a rule, would be able to fulfill the conditions. In most cases the Cubans, being smaller and of less robust physique, would fall short of the requisitions.

"Gen. Ludlow made it an unwritten law that in Havana the negroes should be excluded from the police force. So far as introducing the negro element is concerned, I fear it would but lead to disagreements between white and black patrolmen, and I am confident that the people generally would not show proper respect for negro police."

CHIEF MURPHY.

Jersey City's Police.

Last year was a comparatively quiet one for the police department of Jersey City. The following summary of work done will convince the most casual observer, however, there were few idle hours for the members of the force:

Whole number of persons arrested, 6,931; of which there were committed, 1,470; bailed, 194; fined, 2,119; delivered to other authorities, 214; discharged, 2,934; white, 6,646; colored, 285; having a trade, 1,209; having no trade, 5,722; males, 6,086; females, 845; amount of property stolen, $21,767.03; amount of property recovered, $6,564.87; ambulance calls, 736; patrol wagon calls, 4,469; number of lost children, 503; fires attended, 401; accidents, 854; number of persons found sick in the street and public places, 337; dead bodies found, 89; suicides, 30; sudden deaths, 69; persons reported missing, 232; doors and windows found open, 286; dead animals removed from the street, 1,669; parade permits issued, 252; telephone messages sent, 26,346; telephone messages received, 35,875.

Chief Murphy has been at the head of this department since 1879. Its standard of efficiency has been constantly increased through his personal efforts. Last year, at his suggestion, the chancemen were separated into three grades. In referring to its operations, the Chief remarks in a letter to "City Government:"

"The system of not filling vacancies in the rank of patrolman and grading the chancemen into three grades of pay has proven successful, it has increased our patrol force about twenty men.

"It is the rule in nearly all police departments for men to go into the service at a reduced rate of pay, and if efficient get promoted to the next highest rank at the end of each year until they become patrolmen with full pay.

"This system is bound to increase the efficiency of the service, because it is well konwn in our service the first year or so will determine whether the recruit will ever become a policeman. If he is not fit for the service he is soon dismissed and if he is suitable for a policeman he has a bright future before him. In order to continue this improvement the financial department must help out by giving the money to insure promotion for the worthy chanceman at the end of each year until he attains the rank and pay of patrolman."

—For the quarter ending Dec. 31, 1899, the total number of arrests made by the New York police force was: Males, 25,658; females, 6,606;. Total, 32,264. Number arrested for principal felonies, 2,657; number discharged without trial, 775; number acquitted, 387; number convicted, 394; number sent to other authorities, 44; number died, 12; number pending, 1,045. Total, 2,657.

Fall River's Police Report.

"City Government" is in receipt of the annual report of the Board of Police of Fall River, Mass. It is a neat pamphlet of thirty-eight pages. Strange to relate it does not mention the name of the Chief from beginning to end, therefore "City Government" can give him credit for the most excellent service of his department, as shown by the report, in an impersonal way. With ninety-two patrolmen and a total force of 124, 4,491 arrests were made during the year. The total expense of the department amounted to $131,963.20.

Reporters as Detectives.

Chief Kipley of Chicago has proposed appointing reporters of the city as members of the detective force. When Chief Raitz of Toledo was asked for his opinion of the plan, he replied:

"Men who are intelligent enough to be newspaper men ought to make good detectives. With badges they could go any place and every place. If they can thus go and get the news they can inform the police and report correctly, and if they fail to do that they ought to be ousted, the same as other men. When they are cruel or malicious they ought to be subject to the same penalty as others. We have a badge here for reporters that is recognized, and gives them the privilege of going wherever there is a police line struck. This badge gives them a passage. The order is in this department. Unless a reporter has this badge he should not be allowed to pass, even if the officers know him to be a newspaper man."

Dayton's Police Force.

The Board of Police directors of Dayton propose making extensive changes and improvements in the department.

The estimate shows that a general increase in salaries will be made, with several exceptions, providing the amuont asked is allowed. The total amount of the estimate is $103,142.85. Of this over $92,000 will be devoted to the police fund and about $11,000 to the contingent fund. The deficiency, as stated in the report, is $13,479.73. Last year the estimate aggregated but $80,000.

The report states that a reduction of the salary of chief from $2,000 to $1,500 is contemplated, while the captain of police will be increased to $1,100, and the sergeant detective to $1,000, all of the sergeants to $75, and the patrolmen to $65 per month, respectively. It is claimed in the report that the men have been underpaid, and that salaries should be restored in order to maintain the efficiency of the force.

The report further states that the present police force is inadequate to the needs of the city and recommends the addition of 22 patrolmen, which would still make the force 28 short of the number allowed by the statutes in a city of its size. However, the aim is only to meet the bare requirements.

The board hopes by the appointment of eight patrolmen in addition to the 22 above mentioned to make possible a vacation for each officer every ten days. Patrolmen work twelve hours each day, and this plan of relief, it is argued, will result in better work. The claim is set forth that relief is afforded firemen and all classes of city employees, while the policeman, poorly paid, goes unremembered. One breathing day in ten is thus asked to be allowed, and if the proper appropriation is made this plan will be adopted.

The report in couclusion states that every expense has been reduced to the lowest notch consistent with reasonable service and hopes that the various boards of the city will join with the police board in making the police department an honor to the city and one such as will furnish the protection needed.

Police Items.

—William O'Malley has been appointed Chief of Police of Tracey, Minn.

—The policemen of Youngtown, Ohio, are asking for a raise of ten dollars per month on salary.

—Owen O'Hare has been re-appointed chief of police of the city of Kenosha, Wis., by Mayor Gorman.

—The new Gamewell police alarm system for the Police Department of Camden (N. J.), to replace the old one which was burned out by a live trolley wire not long ago, has been installed.

—Chief Robling of Scranton reports for the fiscal year ending March 31st, $6,498.30 collected in fines, which is larger than ever before, and more than $2,000 in excess of the previous year. The total number of arrests was 2,635, of which 1,662 were for drunkenness.

The "Handsome Squad."

Duncan W. Peck, Commissioner of Public Safety of Syracuse, proposes to organize what will be called the "handsome squad" of the police force of that city.

The men who are to constitute the new squad will be six footers, or, in other words, the tallest men on the police force. They will be relieved of night work and will be assigned to day beats in the heart of the city, where they can be seen and admired by strangers and by people traveling through the city on the cars. The stranger or traveler will instantly get a good impression of the Syracuse police force. The men will be required to keep neat and tidy and will take their new beats with instructions to be courteous and gentlemanly at all times, and to promptly respond when asked by the citizens for information or assistance.

Health.

The Anti-Spitting Crusade.

Redlands, Cal., has an anti-expectorating ordinance.

* * * *

The City of Pine Bluff, Ark, has adopted an anti-spitting ordinance.

* * * *

Superintendent Quigley of the Indianapolis police force has given orders to enforce the anti-spitting ordinance by arresting all offenders.

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On the lamp-posts of the principal streets of Detroit is to be seen the following on a neat sign:

"Please do not spit on the sidewalk."

"That this has a good effect upon the spitters," says an observer, "I can personally testify, knowing quite a number who now edge up to the sidewalk and expectorate into the roadway. The admonition begets this habit of edging and I have no doubt has its effect on would-be spitters on the cars. That it is a boon to the ladies, to say nothing of its hygienic effect, is beyond question."

* * * *

The Municipal Committee of the Council of Clubs, a woman's organization in Syracuse, is urging the enforcement of the "expectoration ordinance." The general manager of the Street Railway Company has promised that within thirty days signs forbiding expectoration shall be conspicuously posted in the cars in English, German and Italian. In this way there will be no excuse for transgressors of any nationality. The conductors areto be instructed to enforce the ordinance.

The Committee has also appointed a woman to have supervision of each of the seven health districts of the city. It will be the duty of each to keep on the lookout for offenders in her territory and report all cases to the health office of the district and to Mrs. Jenney, the municipal chairman. A "complaint book" is to be opened in which Mrs. Jenney will enter every case reported.

New York State Sanitorium.

For the treatment of tuberculosis has been made possible by a recent act of the Legislature, which carries an appropriation of $50,000, although it is understood that the final cost will not fall far short of $200,000. It will have a suitable location in the Adirondacks; a tract of land not to exceed 1,000 acres; a board of trustees of five members,—two must be physicians,—who will serve without compensation, but are to be allowed necessary travelling expenses. The expense of the buildings is not to exceed $150,000, and accommodations are to be furnished for at least 200 patients. Careful provision has been made for the hospital staff to be in charge. Free patients, who have been citizens of the State for at least one year preceding date of application, may be admitted.

Sanitary Barber Shops.

The Boston Board of Health has issued an order that all barber shops, together with all the furniture, shall be kept at all times in a cleanly condition. Mugs, shaving brushes and razors shall be sterilized by immersion in boiling water after each separate use thereof. A separate, clean towel shall be used for each person. Alum or other material used to stop the flow of blood shall be used only in powdered form and applied with a towel. The use of powder puffs is prohibited. Every barber shop shall be provided with running hot and cold water. No person shall be allowed to use any barber shop as a dormitory. Every barber shall thoroughly cleanse his hands after serving each customer. The proprietors of many of the cheap shops say they will have to raise their prices or go out of business. Others say that to heat the razor blades in boiling water would destroy the temper of the steel.

Permits to Sell Ice.

The Ohio Legislature has passed a bill regulating the cutting and sale of ice. It is expected to prevent the cutting and sale of impure ice through local boards of health. The bill is as follows:

"Section 1. No ice shall be cut for the purpose of being sold or used in any city or village of this state from any pond, canal, lake, creek or river within the limits of any such city or village, unless a permit therefore shall be first obtained from the board of helth of such city or village and no person or persons shall sell or deliver any ice in any city or village in this state without first obtaining a permit therefor from the board of health of such city or village and it shall be lawful for any such board to refuse a permit and to revoke any granted by them as aforesaid when in their judgment the use of any ice cut or sold or to be cut or sold would be detrimental to the public health.

"Sec. 2. The board of health of any city or village may prohibit the sale or use of any ice within the limits of such city or village when in their judgment the same is unfit for use and the use of the same would be detrimental to the public health and the said board may prohibit and through its officers stop, detain and prevent the bringing of any such ice for the purpose of sale or use into the limits of any such city or village; and also in the same maner stop, detain and prevent the sale of any such ice found within the limits of such city or village."

The penalty for violating the above law is a fine of not exceeding $100.

—Dr. B. S. Moore, the new Health officer of Syracuse, is making an effort to purify the sources of the city's milk supply. He proposes to apply the tuberculin tests to the herds of seventy-five dairymen who furnish the city with milk. The latter protest loudly and threaten to boycott the city, but the test will be made.

Chicago's Sanitation Problem.

Dr. Arthur R. Reynolds, Health Commissioner of Chicago, addressed the Chicago Academy of Science at its monthly meeting in April on "Some Problems of Sanitation in Chicago."

"The sanitary problems of Chicago," said Dr. Reynolds, "differs from those of most cities with regard to the drainage and water supply, and the fact that the loose, friable soil, on which the city is built, naturally produces dust or mud, according to the weather. The immense quantities of bituminous coal that are consumed continually adds to the surface and the atmosphere.

"The solution of the drainage and water problems will be accomplished when the sanitary waterway and its auxiliary, the intercepting sewer, are completed. The hope of relief from the dust and mud can come only through the complete sealing of the surface of all streets and alleys by the pavement most likely to secure the desired end. Permanent relief from smoke will come through the application of science to the combustion of bituminous coal. Coal in the future may be pulverized at the mines or pressed into bricks and so shipped, for combustion in properly constructed furnaces. There is some reason to hope that eventually Illinois coal may be economically coked or even converted into gas at its source. For the present there must be a reform in the construction of furnaces and a careful inspection of all furnace plans. Severe penalties must be made for increasing the horse power without a corresponding increase in the facilities for combustion.

"As sunlight is the great life-giving principle for man and the chief enemy of all the diseases of germ origin, greater care in future will be taken in the building of residences, shops, and offices, so that an abundance of light will have free access to every part of the building. This fact justifies the present movement for more parks.

"There is much hope for a better sanitary condition in the fact that the people are becoming educated in the nature and prevention of disease. Education is far better than policing to prevent the spread of disease.

"If the present percentage of increase in the duration of life in Chicago is kept up, the city soon will become famous as a great health resort. The bulletin of the Department of Health for April, 1899, shows that during a generation the duration of life in this city has more than doubled. Thirty years ago the average age for deaths in Chicago was 13.9 years. At the present time it is 29.4 years. With an average annual death rate of 14.4 per thousand during the years 1894-'98, compared with an average annual rate of 40.6 per thousand from 1845 to 1854, a saving of 42,050 lives per annum can be demonstrated."

—Buffalo is to have a $50,000 pesthouse.

—Dr. Kerth, Milk and Food Inspector at Evansville, Ind., has detected milkmen who have cans of whole and skim milk in their wagons, mixing the two kinds. The Inspector buys a sample and the same is always furnished from the can containing the whole milk. The customer fares differently, usually getting the mixture. This fraud will probably be stopped by an ordinance requiring skim milk to be carried in cans of a peculiar shape and labelled "Skim Milk," in large letters.

The Prevention of Tuberculosis.

The Munich meeting of the Tuberculosis Commission summarized in an admirable way the regulations which should be established by the authorities for the prevention of tuberculosis. These regulations are so concisely and clearly stated that they might well be embodied in a tract and scattered broadcast through the world. They are as follows:

1. The periodic disinfection of all localities much frequented by the public, especially rooms in which many individuals congregate, such as schools, society rooms, churches, cafes, restaurants, hotels, orphanages, barracks, libraries, convents, hospitals, dispensaries, stores, tramway and railway cars, and cabs.

2. The prohibition of spitting on the floors in rooms and in public conveyances; the placing of cuspidors in parks and other public places, and in vehicles of transportation.

3. The establishment of special playgrounds for children, in order to avoid their playing in localities which phthisical patients might visit.

4. The disinfection and whitewashing of rooms where a case of phthisis or a death from that disease has occurred.

5. The annual medical inspection of persons in schools, academies, offices, factories, etc. Any cases found should be reported to the authorities.

6. The establishment of people's sanitoriums.

7. The hygienic instruction of the tuberculous, so that they may be able to protect themselves and those coming in contact with them.

8. The isolation of the phthisical cases in military and general hospitals. If possible, the erection of separate pavilions.

9. The prohibition of the bathing of the tuberculous with healthy persons; the establishment of separate bath-houses for the former, under medical supervision.

10. The removal of all tuberculous individuals from the schools and their transfer to colonies in the country, where they may be treated.

11. The formation of committees with the object of sending the children of poor persons that are suffering with tuberculosis, or that have died of that disease, to the country, in order to remove them from the infected houses. The children of rich families should also be removed from their homes for a certain length of time.

12. The improvement of the hygienic and dietetic conditions of the poorer classes by the erection of public kitchens, wayfarers' lodges, bath-houses, etc.

13. Philonthropists should make it their object to improve the nutrition and hygiene of individuals in poor families in which tuberculosis has occurred.

13a. The linen of tuberculous persons must be disinfected before being brought into contact with the linen of others.

14. The marriage of very young persons whose appearance suggests that they are inclined to tuberculosis should be opposed. Persons in whose sputum bacilli are present should be prohibited from marrying.

15. The compulsory periodic examination of domestic animals which might become tubercular.

16. The monthly inspection of stables; supervision of the hygiene of the kitchen, of milking and milk vessels; scrupulous care in creameries.

17. The supervision of markets and abattoirs.

17a. The erection of stations at the borders of countries for inspection of imported animals.

18. Strict regulations regarding the products of factories.

19. The giving of weekly lessons in hygiene at all public schools.

20. Each child at school must have its own drinking cup and its own towel. School children should not kiss each other.

21. Instructions to second-hand dealers in books, clothing, etc., to have their wares disinfected. Disinfection of library books as well as of objects that serve for school or general use, must also be performed at certain intervals.

It may not be possible to carry out all the suggestions contained herein, but they form a very excellent guide for modern sanitary efforts.—"Medical Journal," Philadelphia.

—The City of Portland, Md., is agitating the question of the establishment of free public baths.

—The Tennessee State Board of Health has adopted resolutions declaring tuberculosis a contagious and infectious disease, and directing that all inmates of State institutions afflicted with it be isolated in rooms or wards set aside for such patients, and not permitted to associate with other inmates. When the rooms or wards become vacant they are to be disinfected according to the prescribed regulations for contagious diseases.

The Sanitation of New Orleans.

Following the example of the people of Philadelphia, who at last fall's election voted for a large issue of bonds for the filtration of the river water and the improvement of sanitation, the people of New Orleans, by a practically unanimous vote, decided to issue $15,000,000 of bonds for the building of complete sewerage, drainage, and water works systems. The vote was 17,464 for the issue to 371 against. There was no stronger argument for the necessity of this action than the condition of the city itself on the day of election. In most of the voting precincts no one could walk on the sidewalks and pedestrians had either to walk in water up to their knees or get a wagon or a skiff. In some precincts it was impossible to get wagons to the polls through the mud and water. In most of them skiffs, labeled "vote for drainage," were used, and in some cases voters were taken to the polls on the backs of the precinct leaders.

The result, however, amply compensated voters for their trouble. New Orleans has always been a difficult city to drain, as it is surrounded by levees and has scarcely any grade, and the soil itself is of such a character as to make a successful system of drainage a most complicated problem. The problem now, however, seems on the way to solution, and the funds will shortly be in hand to proceed with the great work. Sanitary science will overcome the engineering difficulties which have stood in the way so long and ultimately give New Orleans a clean bill of health—something it has never had before. The system as proposed includes a number of canals and ditches, to be connected with drains, which will be connected with the buildings of the city. The current in these canals will be secured by seven pumping stations, and these will be used to force the water to Lake Borgue and other points where the sewage can be disposed of without any danger to the city's health.

The large majority of votes cast for this bond issue, which is one of the largest ever proposed by a Southern city, shows that the people of New Orleans have at last a realizing sense of the necessities of their situation. The experiment is to be conducted upon so large and difficult a scale that it will take many years to bring it to completion, but there can be no doubt that it will be successful. It will make New Orleans a healthy city and that means a great increase in population and business. No other city in the South is better located naturally for business, and it is a great railroad center and already has a growing foreign commerce. The bond issue was a practical business measure and will pay a handsome return to the city on the investment.—"Chicago Tribune."

—"The cause of public health in our cities," says Henry B. Baker, Secretary of the Michigan State Board of Health, can be advanced by whatever shall most advance the movement for the restriction of tuberculosis, that being an entirely preventable disease and yet the disease which causes most deaths.

—According to a press dispatch the use of formaldehyde as a disinfectant may have to be abandoned by the health department of Chicago, on account of the drug's malignant effect on the city's disinfectors. As a result of the use of the fluid, nine disinfectors are suffering with bronchial troubles and in three instances the effects of the drug nearly proved fatal. The disappearance of Dr. Andrew Conlon, one of the disinfectors, who returned after wandering in the streets for seven days, was found to be the result of inhaling formaldehyde gas. Dr. Conlon had been disinfecting houses and was rendered temporarily insane by the drug. The health department may return to the use of sulphur.

Garbage Disposal in China.

Some time ago the Agricultural Department became interested in the study of the disposal of garbage, sewage, etc., in foreign cities, and solicited the aid of the State Department in obtaining information. The department directed the consular officers of the United States to forward all information obtainable.

An uncanny tale comes from Consul Fowler that makes the reader feel creepy. He says:

"The cleanest cities in China are Hang-Chow and Ning-Pox. In the center of those two cities I have myself seen dogs eating bodies of babies; the rotting corpses of cholera cases; snakes slowly winding in and out; many dogs, slime, dead cats; in fact, the most horrible filth on one side, while across the way the glitter of gold, pomp and luxury; such are the principles of a Chinese street. The garbage collector is the beggar or the starving dog."

Consul Ragsdale writes from Tien Tsin that "all animal food is comparatively costly and the mass of the people are poor. The methods are from house-to-house collection. The work is done by private enterprise and the material deposited in vacant lots and in front of houses where the owners do not employ the collector. Tin cans are much prized by the natives and are a regular article of commerce. When beyond use as a bucket they are flattened out and made into anything from a candlestick to a bath tub—the latter being used only for foreigners. Broken glass is reheated and made into lamps and curios, snuff bottles, etc. All of this material is collected by private enterprise and the sorting is done in any place most convenient to the collector. Household waste waters are thrown into the empty pools at the side of the streets and eventually this water is used for street sprinkling. The streets and the passers-by are sprinkled by means of long-handled ladles.

The street refuse collections are made by men and boys with a basket and a small long-handled ladle or shovel. The basket hangs on the back from the left shoulder and great skill is shown by some collectors in scooping up everything and throwing it into the basket without loss. This material is taken to some bright, sunny and convenient locality, mixed with two parts of street dust and made into cakes, the size of an orange. These cakes are sun-dried and sold as fertilizers. The most convenient place for a foreigner to study the details of these methods is the stone bridge on Legation street. It is only a few hundred yards from the two foreign hotels and the French, German, Japanese, English, Russian and American legations. The bridge, being thus centrally located with a wind-swept stone floor exposed to the sun, possesses all of the requirements of a first-class fertilizer dryer. It is in daily use. The sewage system of Pekin is certainly a combined system. Everything combines in the streets. No filters are used. The supply of street sweeping exceeds the demand by about three inches in depth."

The Decarie Wins Out.

After a sharp competition a contract has just been closed by Henry W. Atwater, manager, 455 St. Paul street, Montreal, Canada, with the city of Minneapolis, to supply plans and specifications for a 150-ton Decarie incinerator and the right to use the patent for a specified sum.

The Davis Garbage Furnace Company's bid for a 100-ton plant was $45,375; the Dixon Company's, $51,500. The use of the Decarie system will save the city from $15,000 to $20,000.

PUBLIC WORKS.

Water.

PUBLIC WATER SUPPLIES FROM DRIVEN WELLS.

PART II.—YIELD OF DRIVEN WELLS—TABLE SHOWING SIZE, DEPTH AND YIELD.

By E. Kuichling, C. E.

It is evident that the total flow of ground water in any given permeable stratum cannot continuously exceed the quantity which enters it by percolation at its out-crop on the surface, or from its catchment area, unless such excess is supplied by seepage from a permanent water-course which is fed from a different area; and it also evident that such flow must necessarily depend on the nature of the material composing the stratum and the magnitude of the rainfall upon the drainage basin, or basins. The conditions of abundant or scanty supply to the stratum are thus infinitely varied, and hence a general discussion of the subject becomes tedious and unprofitable. For this reason it will be expedient to confine ourselves to the consideration of cases where the water bearing strata are not supplied in great measure by seepage from surface channels; also because such cases are of more frequent occurrence and posses greater interest than the others.

The percentage of the annual rainfall in any given locality, which is absorbed by the surface soil and percolates down into the deeper strata, varies within wide limits. Thus in very open sandy soil, it may amount to 60 or 70 per cent.; in open sandstone to 25 per cent.; in limestone to 15 per cent.; and still less in clay, granite, etc. From a number of experiments made by English observers, it appears that in gravelly loam and porous chalk, the percolation is about 30 per cent.; and this estimate is confirmed by observations in France and Germany. It must, however, not be understood that these percentages apply to every precipitation, as the quantity which reaches the subsoil depends on both the duration and intensity of the rain, and the season of the year. In general the absorption increases with the duration of the storm, and is greatest in the spring and autumn months, as previously pointed out.

In consequence of the slowness of the subterranean flow, especially in permeable rocks, there is always the probability of its constancy and uninformity at all times, irrespective of the variations in the rainfall; and it is also obvious that these desirable qualities will become more pronounced in proportion as the extent and thickness of the water-bearing stratum increases. Thus the yield from a large and deep bed of saturated sand or gravel, which is free from clay or fine silt, is far more reliable throughout the seasons than many of our smaller surface streams; and there are numerous instances of the complete cessation of flow in such streams during periods of drought, while the driven wells in the same locality continued to deliver water in undiminished quantity. Such a condition, however, can exist only when the delivery does not exceed the natural underground flow due to storage. On the other hand, if the water-bearing material is small in volume, a considerable draft during a dry season will soon exhaust the subterranean storage, and the well will give out. A similar result will also occur where the extent of the stratum is relatively large while its outcrop is small, as its filling with water may have required many years.

The quantity of water that may be obtained from deep wells is often greatly overestimated, especially in localities where extensive deposits of saturated sand and gravel are found. The success of a few wells at such a place is usually followed by the driving of others into the same basin, whereupon the combined draft frequently produces a material reduction in the yield of those which were sunk first. Experience also teaches that in consequence of lack of homogeneity of the deposit or stratum, the subsoil water flows much more freely in certain places than in others, so that a copious supply in one well is not a sure indication of similar yield from another well only a few rods distant. It is therefore generally expedient to consider that the water in any stratum is not unformly distributed, but seeks its own lines of least resistance analogously as on the surface; also that the natural laws which govern the quantity and course of such water are similar to those which relate to surface streams; hence in estimating the adequacy of a proposed system of wells, due cognizance must be taken of the magnitude of the catchment area, the rainfall, the percolation, the probable subterranean storage volume, the hydraulic slope of the normal water-table, etc. The first-named factor is often very difficult of even approximate determination, as the outcrop of the water-bearing stratum may be far beyond the surrounding ridges of the locality where the wells are to be sunk.

A careful study of this subject was made some years ago by Mr. Frederic P. Stearns, now Chief Engineer of the Boston Metropolitan Water Supply; and in his report to the Massachusetts State Board of Health, he gives the following outline of the manner in which an estimate of the sufficiency of a proposed subterranean source may sometimes be made: "If, for instance, it is desired to obtain a supply of 300,000 gallons per day from a well, and the watershed draining thereto is one square mile, we find from the table relating to the necessary storage for surface water supplies, that when there are no free water surfaces, such as reservoirs, ponds, swamps, etc., the required storage must be 29,800,000 gallons. When the supply is to be taken from the ground, it seems fair to assume that at least an equal amount of storage will be needed, and the question to be considered relates to the probability of obtaining this amount of available storage, which is equivalent to the contents of a pond having an area of 10 acres and a depth of 9 feet. Porous sand or gravel, when saturated, contains in the neighborhood of 35 per cent. of water, but of this a portion remains after the ground is drained, so that water to the extent of only about 25 per cent. of the whole volume will run out when the water table is lowered by pumping. Therefore, in order to obtain 300,000 gallons daily from a square mile during the driest period, it is necessary to have a storage equivalent to that furnished by 40 acres of porous gravel in which the water-table can be lowered 9 feet. A superficial examination of the ground may show whether it is probable that this amount of storage can be obtained, and thus indicate whether it is desirable to make further investigations."

After a decision has been reached with regard to the catchment area and storage, the rate of percolation into and through the stratum must next be considered. This can generally be done only by experiments with existing wells, or with a number of new ones sunk for the purpose. The details of these operations will be referred to subsequently, and it will suffice for the present to say that they are usually attended with energetic and prolonged pumping, for the purpose of ascertaining the general direction and slope or hydraulic grade of the underground stream under varying conditions of exhaustion and replenishment, as well as the storage capacity and homogeneity of the material. From the indications thus gained, very important conclusions are often reached, as it frequently happens that the best location for the well is not shown by the configuration of the surface, or that the extent of the saturated deposit is limited by unexpected lateral beds of relatively impervious soil. Pockets or basins of this kind are sometimes encountered in the construction of deep sewers and tunnels, and their vigorous pumping for a period of several days may lead to the inference that the supply of water contained therein is inexhaustible; but a time generally comes when the water drops quickly to the required level, and the basin does not refill for a long time thereafter.

Instances of the character mentioned are by no means rare. Thus in 1898, at one of the new driven-well stations for the additional water supply of Brooklyn, N. Y., all the preliminary examinations pointed to the existence of a subsoil of unusual uniformity. Three wells of the contemplated series had been driven and tested satisfactorily, but on sinking the fourth one to the same depth, no water was obtained, and it was subsequently found to have been located at the edge of an extensive subterranean basin of saturated sand and gravel. The location of the remaining wells was thereupon altered, and eventually the plant yielded 2,500,000 gallons per day. In commenting on this experience, Mr. Joseph Strachan, the engineer in charge of the work, very properly remarked that "of course, no living man could tell what was under the ground until we put the tubes down."

Similarity at Chester, S. C., a well was located by a certain geologist, after considerable study, in the bottom of a valley, and it was expected that an abundant supply of artesian water would be struck at a depth of from 400 to 500 feet. When the drill had passed through 500 feet of rock, the yield was only 30,000 gallons per day, which was entirely inadequate. The site was then abandoned, and another well, 400 feet deep, was bored on a hillside a mile away. This attempt was successful, as a supply of 250,000 gallons per day was obtained. Another case is related by the late Albert F. Noyes, C. E., in connection with the construction of a deep sewer in a wet gravelly subsoil. Here a six-inch centrifugal pump was kept working at full capacity for several weeks without interruption, and apparently without much effect, when at length the storage in the upper portion of the stratum became exhausted and the water level fell rapidly. A fourth instance is that of the first well of the Water Company at Peoria, Ill. For a time this well furnished an abundant supply, but after a few years it began to fail. From the nature of the water-bearing material, the failure could not be ascribed to clogging by silt, and hence it must have resulted from the exhaustion of the storage and the insufficiency of the catchment area to supply the demand.

A very instructive case is also described in the report made in 1899 by Mr. J. J. R. Croes, C. E., to the Water Commissioners of Syracuse, N. Y., in relation to the yield of a series of driven wells located in the valley of Onondaga Creek about three and one-half miles south of that city. This valley is about one-half mile wide on the bottom, and has a slope to the north of 6 feet per mile. Large deposits of gravel were known to exist therein, from which copious streams of water flowed when tapped by tubular wells. In 1887, eight pipes were driven into the gravel and connected with a steam pump, which was worked for 82 days at the rate of 3,170,000 gallons per day for a part of the time without apparently affecting the level of the ground water. The prospect of securing an adequate supply for the city was so promising, that a more elaborate test was made in September, 1888, when a system of 24 six-inch and 8 four and one-half inch tubular wells, 40 feet deep and 50 feet apart, was driven, together with a number of other tubes for observing the level of the ground water during the pumping. The pumps were operated continuously for 31 days from September 4 to October 5, at the rate of from 6,000,000 to 7,000,000 gallons per day, and the surface of the ground water was then found to have fallen 6 feet at the center of the series of wells, and 4 feet at the circumference of a circle 1,500 feet in diameter. On stopping the pumps for 24 hours, the water rose 3 feet at said center and from 8 to 15 inches at said circumference.

The pumping was resumed on the following day, October 6, and continued without material interruption at the rate of 6,000,000 gallons per day until November 4, when it was found that the surface of the ground water had fallen 6 feet below its original level at the center, 4 feet at a point one-half mile south of the center, and 3 feet at one-half mile north of the center. Hence in 60 days its surface had been lowered 4.5 feet on the average over a circular area one mile in diameter, and its slope showed that the effect of the pumping had extended at least four miles up and down the valley. After the pumping was stopped, it required 45 days for the natural subterranean flow to refill the basin to its former level. It should also be noted that during this test, numerous heavy rainstorms occurred, whereby the ground water was liberally replenished and its flow increased much above the normal autumn rate, as shown by the subsequent rise of the water in the wells. The conclusion was therefore reached that the flow was here very variable and would be seriously affected by a prolonged drought; also that the supplying watershed was not very extensive, and that an outlet from the water-bearing stratum occurred at some springs situated about 3.5 miles above the site of the wells; and finally, that as the quantity pumped from the subsoil, under the favorable conditions of rainfall mentioned, was only one-half of what would soon be required for the city, the source must be regarded as entirely inadequate.

The effect of long-continued pumping in

seriously lowering the normal level of the ground water surface, is also shown by the experience gained with the driven well plant at Plainfield, N. J., as described in 1894 by Mr. L. L. Tribus, C. E., in Vol. 31, Trans. Am. Soc. C. E. The water is here taken from a system of 20 six-inch wells, spaced about 50 feet apart, and driven from 35 to 50 feet deep into an extensive bed of saturated sand and gravel. The wells were located on a strip of land 25 feet wide and 1,000 feet long, and on being tested their yield was found to be more or less unequal, five of them giving 1,131,000 gallons per day, ten giving 2,085,000 gallons, fifteen giving 3,210,000 gallons, and the entire twenty giving only 2,800,000 gallons per day. After the pumps had been in operation for some months at the rate of about 1,700,000 gallons per day, a long drought in 1891 caused the water table to fall gradually to a stage from 6 to 7 feet below its former level, which necessitated a corresponding lowering of the pumps in order to maintain suction. It may also be added that similar trouble has been experienced in many other places, and hence in planning new works, care should always be taken to make ample allowance for a considerable future fall in the ground-water level.

Such falls and consequent reductions of discharge are likewise of frequent occurrence in wells drilled into deep rocky strata. Thus the flow of the famous artesian well at Grenelle, Paris, which has a depth of 1,807 feet, was greatly diminished by the opening of the Passy well nearly two miles distant in the same stratum; and a similar experience is recorded with the wells in the Potsdam sandstone of southern Wisconsin and northern Illinois. These latter range in depth from 1,200 to 2,000 feet, and usually overflowed when first drilled, their discharges then being from 90,000 to 350,000 gallons per day; but this yield has gradually diminished with the opening of other wells in the same formation. A good instance of such reduction is afforded by the development of the water supply of Rockford, Ill., where two deep water-bearing sandstone strata, separated by a thick layer of impervious limestone, are available. The lower is the Potsdam formation, which is of great thickness while the upper is the St. Peter sandstone, about 200 feet thick, and covered by the glacial drift. The first supply was taken from 5 eight-inch wells sunk from 1,300 to 2,000 feet into the Potsdam strata. After a time the yield of these wells proved insufficient, and others were drilled into the St. Peter sandstone. The latter, however, also began to fail, and it became necessary to place the pumps far below the surface. A careful study of the matter was then made, with the result that the pumps were placed at the bottom of a shaft 80 feet deep, from which tunnels for the suction pipes were run to intercept the different wells.

Another striking example of the progressive lowering of the water table by long continued pumping is found in the valley of the Thames at London, England. In an article in the "British Medical Record," of February 28, 1891, it is stated that the taking of large quantities of water from deep wells in the underlying chalk basin, has been felt in the main and lateral valleys in the vicinity of the metropolis to such degree as to excite the alarm of both manufacturers and farmers. "Springs which were formerly perennial are now dry, and the level of the water in deep wells has fallen more than 20 feet in less than as many years. Mills are being abandoned for lack of water power, and rivers which formerly flowed as full streams are now lost in swallow holes, or flow only scantily, or for only a few weeks in occasional wet years. In 1821, the water in a well in the eastern part of London stood at 22 feet above ordnance datum; in 1851, its average height was 43 feet below said datum, and in 1881 it was 105 feet below, thus exhibiting a fall of 127 feet in 60 years. This depletion is not explicable on any theory of diminished rainfall, and the cause is to be found wholly and solely in the fact that the water has been increasingly drawn from the chalk basin in excess of its supply." Possibly the foregoing description is somewhat exaggerated, but it indicates very clearly the results which are liable to occur when the balance between supply and demand of subterranean water is not preserved.

The motion of the ground water toward an outfall is always maintained by the formation of a certain slope of its surface, similarly as in the case of open channels. This slope obviously depends on the size of the grains constituting the material through which it flows. In the coarse sandy subsoil of the southern half of Long Island, the water-table slopes toward the sea at the rate of from 8 to 12 feet per mile, but in finer-grained material it increases rapidly, and attains a maximum in impervious substances like clay. When a well is sunk into any saturated stratum and the water is withdrawn by pumping, a variety of hydraulic slopes will immediately be established in every radial direction from the well as a center, such slopes being greatest at the walls of the well, and gradually becoming flatter in proportion as the distance therefrom increases. In a homogeneous material like the selected sand of a filter bed, the successive slopes in any radial direction will form a continuous curve, and the surface of the water-table will be correspondingly depressed so as to give it a flaring shape resembling the mouth of a trumpet. Such conical depressions are sometimes called "cones of influence," and their depth and form are governed by the rate of draught and character of the material. A small draught from coarse soil will produce a cone of slight depth and wide base, whereas the same draught from a fine-grained bed will give a cone of considerable depth with a correspondingly narrow base.

If a number of tubular wells are located at short intervals in a coarse stratum, and are vigorously pumped, their cones of influence will intersect, and the general depression of the water-table will assume a somewhat irregular form, depending on the position and spacing of the wells. Usually they are placed in one or two rows extending transversely across the direction of flow of the ground-water, thus causing the depression to become elongated; and to indicate its extent under different conditions, the following data may be of interest.

At one of the driven well plants of the Brooklyn Water Works, there are 124 two-inch tubes, driven 40 to 60 feet deep in two rows 18 feet apart, the tubes also being 16 feet apart longitudinally, and all of them being coupled to a single suction main. During a test of the plant, and after pumping had been continued for some time at the rate of 6,000,000 gallons per day, the water-table was depressed 8 feet at the wells, but not appreciably at a distance of 2,000 feet therefrom. A similar experiment was also made at another plant of the same works, where there were 150 two-inch wells driven to depths of from 80 to 90 feet, the spacing of the tubes being as in the first-named plant. The natural surface of the water-table was here only about one foot below the surface of the ground; but after pumping at the rate of 5,000,000 gallons per day for 20 days, it was depressed 12 feet at the wells; and when the rate was increased to 10,000,000 gallons per day the depression at the wells was 15 feet, and was still noticeable at a distance of 2,500 feet therefrom. The records of other tests with one of the Brooklyn plants in 1886 show that the water table is depressed 56 inches at a distance of 300 feet from the wells, 26 inches at 2,300 feet and 6 inches at 4,300 feet.

Reference may also be made in this connection to the results found with the experimental driven well plant near Syracuse, N. Y., as previously described. In the coarse gravelly subsoil of that locality, the central depression of the water table was 6 feet after pumping for 31 days at the rate of from 6,000,000 to 7,000,000 gallons per day, while at distances of 750 feet from the center the depression was 4 feet; furthermore, after pumping 30 days longer at the rate of 6,000,000 gallons per day, the central depression was not materially increased, but at distances of one-half mile from the center, the average fall of the water level was 3.5 feet.

Similarly, at Cohasset, Mass., a plant of 65 two-inch wells, driven from 22 to 45 feet into a gravelly stratum, yielded 450,000 gallons per day during a pumping test of 5 days, with the result that the surface of the ground water was lowered 10 feet at the wells, and 1.5 inches at a distance of 1,500 feet. At Newton, Mass., a set of 8 large wells were sunk in 1886 to a depth of from 30 to 45 feet, and were tested by Mr. Noyes by continuous pumping for 31 days, their yield ranging from 324,000 gallons per day at the beginning to 283,000 gallons per day at the end. The water level in a few test pipes located from 50 to 100 feet from the wells fell about 21 feet within a few hours, and remained at this reduced level during the experiment, but returned to its original position 24 hours after stopping the pump. At Lowell, Mass., a four days' pumping test in 1897 of a gang of 26 two and one-half inch wells, driven from 27 to 40 feet deep into a bed of water-bearing gravel varying from 5 to 15 feet in thickness, caused the water-table at the wells to fall 12 feet when the discharge was at the rate of 820,800 gallons per day. Numerous other cases of the lowering of the water-table over probably extensive areas of permeable soil in consequence of excessive pumping might also be cited, but unfortunately the data pertaining thereto are deficient in both scope and exactness, thus becoming of little value quantitatively. It is earnestly hoped that this lack will soon be supplied by abundant records of complete experiments with wells in different materials, in order that the practical availability of many interesting laboratory investigations in the same direction may be thoroughly tested.

In rocky strata a similar depression of the water-surface pertaining to them is also caused when the water is withdrawn either naturally or artificially, but the outlines of the cone are here usually modified by the existence of well-defined channels, seams or fissures. Such passages act like a system of irregular pipes, in which the friction heads or hydraulic slopes vary with the form and size of the channels, as well as with the quantity of water removed. For this reason the observed depressions in deep wells exhibit a wide range; and as it is generally impracticable to provide a series of other wells merely for observation purposes at different distances from the main well, our knowledge of the magnitude and extent of the depressions laterally is as yet very limited. To indicate what may be expected in such wells, it will therefore suffice to cite only a few cases.

In the autumn of 1893 a set of 6 eight-inch wells was sunk to a depth of about 120 feet in certain limestone and shale strata near the southern part of Rochester, N. Y. Water of tolerable quality was found in several seams at different levels, and rose somewhat above the surface of the ground, thus indicating a copious yield. On applying an ordinary steam pump to one of the wells, a discharge of about 500,000 gallons per day was obtained before suction was lost by the fall of the water level, which occurred within a few days. Deep-well pumps were then provided, but the yield could not be increased even when the surface of the water in the wells was reduced 60 feet or more. Two of the wells were then enlarged to a diameter of ten inches and torpedoed, but the delivery remained the same. At Rockford, Ill., and additional water supply was obtained in 1891 by sinking 4 eight-inch wells to a depth of a few hundred feet into the St. Peter sandstone. The water level in this formation was originally 6 feet above the surface of the ground, but by gradually increasing the discharge of the wells by various means from 860,000 to 2,000,000 gallons per day, it fell in 1897 to a position 85 feet below the surface.* A similar instance is also recorded at Indianapolis, Ind., where the pumping of 19,000,000 gallons per day from a set of 20 ten-inch and 5 eight-inch wells, averaging about 300 feet in depth and penetrating about 220 feet into a limestone formation, causes the water-table to fall from an original level of 8 feet below the surface of the ground to points ranging from 23 to 27 feet below the surface.†

The foregoing remarks are doubtless sufficient to indicate that a great diversity exists in the data relating to deep wells in either earthy or rocky formations, and also that the acquisition of suitable data for estimating the probable yield of a subterranean source of water supply is usually a rather complicated and expensive matter. Observations of the depression of the water-table and the rate of flow in limited areas of sandy and gravelly soils are comparatively numerous, and during the past twenty-five years a number of highly interesting studies of the motion of water through such soils have been published; but on applying the results of these investigations to the case of wells in extensive natural deposits, grave disagreements are encountered so frequently that we are forced to the conclusion that little confidence can yet be placed in any mathematical formula for the delivery of a deep well in such material. With experience of this kind in relation to the most favorable soils, there is still less inclination to resort to theoretical expressions for flow through dense rock or unknown seams and fissures; and as it is the purpose of this paper to present the subject mainly from a practical standpoint, the discussion of such formulas will be omitted and in place thereof the following compilation of the size, depth and yield of a large number of deep wells in this and other countries is submitted.

*"Engineering News," March 4, 1897.

†Report on the Indianapolis Water Works, by John W. Hill, C. E., 1899. Printed in "Water & Gas Review," May, 1899.

TABLE I. Showing Size, Depth and Yield of Mutiple Wells for Single Plants.

in Various Localities.

Location	No. of Wells	Diam. of Wells in Inches	Average Depth in Feet	Original Discharge in Gals. per Day	Completion Year of	Flowing or Pumping	Authority
Brooklyn, N. Y.	100	2	60	4,600,000	'94	Pump	Report, 1896.
" " "	110	2	41	3,500,000	'94	"	" "
" " "	150	2	38	4,135,000	'94	"	" "
" " "	3	6	153	684,000	'91	Flow	" "
" " "	3	6	153	864,000	'91	Pump	" "
" " "	4	4	158	129,600	'91	Flow	" "
" " "	4	4	158	504,000	'91	Pump	" "
" " "	4	8	151	3,500,000	'94	"	" "
" " "	12	6	51	2,500,000	'94	"	" "
Camden, N. J.	93	8	100	10,500,000	'98	"	E. N. May 11 '99.
Charleston, S. C.	4	12 to 4	2,000	1,500,000		Flow	E. R. 1897.
Clinton, Iowa	3	8 to 5	1,453	2,000,000		"	" " 1893.
Cohasset, Mass.	64	2	22 to 45	450,000	'86	Pump	" " 1887.
Columbus, O.	32	6	60	6,000,000	'94	"	Am. W. W. A. '99.
Dayton, O.	9	6	40 to 45	3,260,000	'86	"	E. R. 1887.
Franklin, O.	6	6	60 to 70	1,000,000	'86	"	" " "
Ft. Worth, Tex.	13	8	960	1,000,000	'83	Flow	E. N. Aug. 2, '84.
" " "	95	2	24	3,240,000	'87	Pump	" " Dec. 3, '87.
Galveston, Tex.	{27 3	7 9	800	4,500,000	'95	Flow	" " Mar. 3, '98.
Great Bend, Ind.	6	4	72	607,000	'88	Pump	
Hyde Park, Mass.	64	2	22 to 45	1,296,000		"	E. R. 1887.
Indianapolis, Ind.	12	10	308	9,290,000	'98	"	Report, 1898.
" "	{20 5	10 8	{308 295	19,000,000	'98	"	" "
Lincoln, Neb.	15		135	1,200,000		"	U. S. G. S. '99.
Lowell, Mass.	26	2.5	27 to 40	820,800	'97	"	E. R. Sept. 24, '98.
" "	169	2.5	27 to 40	4,500,000	'97	"	" " " " "
Memphis, Tenn.	{10 45	6 8	260 to 480	28,000,000	'92	"	E. N. Sept. 12, '91.
Methuen, Mass.	45	2.5	29	500,000	'94	"	A. W. W. M. 1897.
Muncie, Ind.	3	8		1,500,000	'85	"	E. N. April 17, '86.
Pensacola, Fla.		4	60	* 50,000	'86	"	A. S. C. E. 1894.
		6	280	*150,000	'86	"	" " " " "
Plainfield, N. J.	20	6	35 to 40	2,800,000	'93	"	" " " " "
Pleasant Mills, N. J.	8	3	50	432,000	'86	Flow	E. R. 1886 p. 372.
Rockford, Ill.	5	8 to 6	1,300 to 1,996	1,353,600	'75	Pump	U. S. G. S. 1896
San Antonio, Tex.	3	8	775	4,500,000	'94	Flow	E. N. Aug. 9, '94.
Savannah, Ga.	{4 20 1	10 6 4	350 to 400	6,000,000	'90	Pump	" " June 8, '93.
" "							
" "	12	12	500	9,500,000	'93	Flow	" " " " "
Schuyler, Neb.	26	2.5	50 to 67	700,000	'92	Pump	" " Sept. 1, '92.
Sea Bright, N. J.	5	3	125	180,000	'88	"	" " July 13, '89.
" " " "	3	3	258	432,000	'88	"	" " " " "
Terre Haute, Ind.	10	8	23	3,388,000		"	E. R. 1887 p. 293.
Texarkana, Ark.	10		45	1,044,000	'66	"	" " " " "
Topeka, Kan.	24	6	30	4,000,000	'82	"	E. N. Jan. 20, '83.
" "	†	6	30	{† 253,000 to 308,000	'82	"	" " " " "
Westboro, Mass.	33	2	55	648,000		"	E. R. 1887 p. 293
Leipsic, Germany.	324	7	50 to 70	16,000,000	'93	"	N. E. W. W. 1894.
London, England (Kent Water Co.)	14	various	70 to 500	18,578,000		"	W. & G. June 1899.
London & Vicinity (Deep Wells in Chalk)	32	"	"	41,386,000		"	" " " "

ABBREVIATIONS: E. N., Engineering News; E. R., Engineering Record; U.S. G. S., U. S. Geological Survey Report; A. S. C. E., Am. Soc'y. of C. E.; N. E. W. W., New England Water Works Asso.; W. & G., Water & Gas Review; A. W. W. A., American Water Works Asso.; A. W. W M.; American Water Works Manual; * Refers to each well; † Refers to wells singly.

The foregoing table by no means embraces all of the available deep well records, but it is probably representative of those which relate to public water supplies of considerable magnitude. A long additional list of other wells in the United States might readily be compiled from some of the recent publications of the U. S. Geological Survey, as well as from the technical journals, but no particular value can be assigned to such an enumeration unless it is accompanied by accurate geological details and long-continued observations of flow, such as have hitherto been given in only a few cases. These important omissions will doubtless be remedied in the future when their practical utility becomes more extensively recognized. It should also be noted that the discharges given in the said table are those which were observed during tests of more or less duration soon after the completion of the well or set of wells, and that the figures are probably not applicable a few years afterward, as it is a very common occurrence for the yield to diminish materially in the ocurse of time.

Various reasons are given for such reductions of flow, and among them the following principal ones may be cited: The opening of mines or other wells in the same locality; the diminution of the quantity of rainfall which percolates into the subsoil in consequence of deforestation and agricultural operations; the gradual exhaustion of the underground water storage where the drainage area is limited, or the water-bearing stratum is of small extent, or the motion of the water through the pores is impeded by fineness of grain; the closing or clogging of previously open passages at the outcrop of the permeable stratum by the entrance of silt, which is forced downward and laterally from the superincumbent layers by the increased atmospheric and hydraulic pressure due to heavy flow or pumping at a distance; the inflow of sand, etc., into the well and its settlement to the bottom, whereby the yield from the lower portions is obstructed; the clogging of water passages in the material near the well and of strainer orifices; and lastly, the reduction of the diameter of the tube by the formation of rust or organic growths. Little further explanation of any of these reasons is necessary, and their applicability to any particular case is obviously governed by local conditions.

The citation of a few instances of diminished flow may perhaps be of interest in this connection. In 1894 a thorough test of the yielding capacity of the various driven-well plants of the Brooklyn, N. Y., water works was made, and it was found that in about nine years the delivery of the small tubular wells of the Baiseley plant had decreased from 5,000,000 to 2,000,000 gallons per day. It was decided that this reduction was due to some clogging, and the pipes were accordingly pulled up, cleaned and re-driven, with the result that the original capacity was nearly restored. On the other hand, the same operation on two 4-inch deep wells, which originally flowed at the rate of from 8,000 to 32,000 gallons per day in 1891, proved to be positively detrimental, as their subsequent natural flow fell to from 4,300 to 5,800 gallons per day, and a similar reduction was observed when the pumps were applied. A third 4-inch well of the same set at Baiseley's was tested without cleaning, and its yield was found to be only about one-half of what it was two or three years before. This experiment with the 4-inch wells demonstrated that there was here not only a gradual and large diminution of original capacity, but also a further damage by the disturbance of the subsoil when the two pipes were pulled up and re-driven, thus reversing the result in the case of the comparatively shallow 2-inch wells. It may also be added that the test of the small tubular wells of the Jameco, Forest Stream and Clear Stream plants exhibited a similar reduction of original capacity after nine years' use, and that their pulling up, cleaning and re-driving was followed by a great improvement. Thus at the Forest Stream station, a gang of 73 two-inch wells yielded before cleaning only 2,118,000 gallons per day, while after cleaning and re-driving in 1894 the same wells gave 3,470,000 gallons per day.*

A marked reduction of discharge was likewise observed at the artesian well plant for the supply of Savannah, Ga., which was constructed in 1887. At the end of 1888, this plant consisted of one 4-inch, fifteen 6-inch and two 10-inch wells, sunk from 350 to 400 feet deep into strata of water-bearing sand and limestone; and in that year the average yield of these wells was 5,850,000 gallons per day. The discharge of some of the wells, however, soon began to reduce owing to the probable inflow of sand, etc., and five new 6-inch wells were added in 1889. In 1890, two 10-inch wells 503 feet deep, and one 12-inch well 1,550 feet deep, were added, and one of the two original 10-inch wells was deepened

*History of the Brooklyn Water Works, by I. M. DeVarona, Engineer of Water Supply, Brooklyn, 1896.

to 1,009 feet in the limestone rock and heavily torpedoed; but all these efforts were unsuccessful, as the average yield of the entire plant in 1890 and 1891 was only 6,630,000 gallons per day. It may also be remarked that these wells were doubtless located too near each other, and that on June 13, 1891, the water surface in well No. 1 was 9 feet lower than in well No. 25, which was only 1,600 feet distant; furthermore, that the influence of the heavy pumping therefrom in lowering the level of the ground-water was felt at a distance of nearly nine miles from the station. In 1892 and 1893, another set of twelve wells was sunk in a different location near the seashore. These wells were all 12 inches in diameter with an average depth of 500 feet, and were located in a straight line 300 feet apart. They were also cased for a depth of about 250 feet to the top of the water-bearing limestone strata, which contained many open seams and cavities. A copious natural flow was obtained from them which was allowed to discharge into a capacious brick conduit terminating at the pumping station, and in March, 1893, this flow was found to be 9,500,000 gallons per day, while the capacity of the old wells had decreased to less than 6,000,000 gallons per day.† It appears, however, that the yield of the new wells has also gradually diminished, as a gauging made in 1897 showed a flow of only 6,900,000 gallons per day, which is a reduction of over 27 per cent. in four years. An examination of the plant revealed the fact that sand had accumulated to a depth of from 10 to 12 feet at the bottom of the wells, and that some of the seams or cavities leading to them had probably become obstructed.†† Further experience will indicate whether the removal of the sand will restore the original flow, or whether a permanent reduction of subterranean storage capacity has occurred.

An appreciable loss of delivery was also found at the deep-well plant of the Memphis, Tenn., Water Works, which was put in operation in 1891. There were here originally ten 6-inch and thirty-one 8-inch tubular wells, ranging from 260 to 480 feet in depth, and extending from 80 to 130 feet into a water-bearing bed of fine, white sand covered by an impervious stratum of clay, 150 feet thick, which prevents both the escape of the water from the sand below and the introduction of impurities from the surface of the ground above. Subsequently fourteen additional wells were driven. The majority of the wells are from 350 to 400 feet deep, and the water rises in them to near the surface. To increase their yield, however, the flow is discharged into a tunnel conduit placed in the clay about 80 feet below the surface, and thence into the suction well of the pumps. Great care was taken in the design of the strainers, which form the lower parts of the well-tubes, to exclude the fine sand into which they were dirven, but in spite of every precaution the openings became clogged and the delivery was correspondingly reduced. The experiment of clearing the strainers by forcing water down the pipes and outwardly through the perforations into the subsoil, was then tried and found to be successful. There is, however, some danger of breaking the seal of the overlying stratum of clay in this operation, as the water thus discharged under considerable pressure tends to rise upward along the exterior surface of the tube, thereby establishing an undesirable communication with the surface.*

The sinking of new and deeper wells in the neighborhood of existing sources of supply often causes a large reduction of yield. An interesting instance of this kind occurred in 1885 at Fond du Lac, Wis., where the flow of a large number of private artesian wells was greatly affected by the operation of the new municipal water works in pumping from four wells about 600 feet deep.† Compensation for the damage thus sustained was sought in the courts and gave rise to considerable trouble. At Denver, Colo., three wells about 250 feet apart were sunk at different times to a depth of 555 feet. The flow from the first one was reduced about 33 per cent. by the opening of the second, and after the third well had been drilled, the combined flow of the three was only a little more than the original yield of the first. A fourth well about 1,500 feet distant from this group caused no appreciable difference in their flow.†† In like manner it was found that in a set of eight 3-inch wells, 50 feet deep and 60 feet apart in a gravelly subsoil at Pleasant Mills, N. J., the closing of any one well was followed by an immediate increase in the yield of the others. One well of the set gave a flow of 178,500 gallons per day, while the combined flow of the whole is only 432,000 gallons per day.§ The famous Grenelle well at Paris originally discharged 748,300 gallons per day at the surface of the ground from its lower tubular section of 6.70 inches diameter. This tube was, however, afterward crushed by the external pressure of the clayey strata and replaced by one of 3.94 inches diameter. The discharge was also greatly reduced by causing the water to rise in a vertical standpipe and overflow at an elevation of 33 feet above the pavement. In this condition the delivery in 1861 was 198,000 gallons per day, but within 36 hours after the opening of the Passy well two miles distant, it fell in that year to 177,000 gallons per day, and in 1888 it was further reduced to 73,700 gallons per day at a height of 125 feet above the surface. The Passy well yielded at first 4,400,000 gallons per day at the ground level from its bore of 27.5 inches, but in consequence of gradual obstruction by sand, etc., its flow in 1888 was only 1,362,000 gallons per day.*

Besides the cases mentioned above, there are many others of similar character in various part of this country, notably in southern Wisconsin, northern Illinois, portions of Texas and Florida, etc. General reference thereto is contained in the discussions of the topic by prominent engineers and superintendents of water works in Vol. 31 (1894) of the Transactions of the American Society of Civil Engineers, and the Proceedings of the American and New England Water Works Associations for the past few years. Foreign technical publications likewise contain numerous citations.

It should also be mentioned that while progressive diminiution of flow has been observed in the majority of cases where relatively large quantities of water are taken from subterranean sources, one finds nevertheless in the literature of the subject occasional instances of constant flow for long periods of time, as well as assertions of material increase in yield by vigorous pumping. Thus it is said that there has been no change of pressure and flow for more than ten years in the famous 12-inch Ponce de Leon well and several 6-inch and 4-inch deep wells in limestone and shale strata at St. Augustine, Fla.;† and in discussing the yield of certain wells of moderate depth in sandy subsoils at Plainfield, N. J., and Brooklyn, N. Y., the opinion was expressed by several engineers that the delivery of such wells could be considerably increased after a few weeks of strong pumping by the formation of underground channels or passages, in consequence of which the frictional resistances to the flow of the water through the sand and gravel become greatly reduced.†† There is, however, always some risk of spoiling a well by such operations in a subsoil which is not homogeneous, as an excessive rate of flow may easily lead to the obstruction of existing paths of least resistance by the importation of fine material.

Reference should likewise be made here to the fact that valuable data relating to the yield of saturated subterranean strata are often gained during the sinking of deep excavations or pits for mine and tunnel shafts, dams, piers, and other purposes; but unfortunately the published descriptions of such works are generally defective in this respect, probably in consequence of the belief on the part of the writers that the recital of pumping details possesses little interest for their readers. These records are, however, of great significance to the students of underground water supply and drainage problems, and it is earnestly hoped that engineers in charge of deep inland excavations will supplement their descriptions with a full statement of the quantity of water encountered at different depths and seasons. A notable instance of the communication of such data occurs in the valuable paper of Mr. Chas. S. Gowen on the foundations of the new Croton dam, which was read before the American Society of Civil Engineers on February 21, 1900, and from which the following memoranda have been taken:

This unusually large excavation was made in close proximity to the Croton river in which more or less water flows at all times, as the drainage area between the old Croton dam and the site of the new work is quite extensive. Under the river-bed the material above the bed rock is mainly sand, gravel and boulders, which can fairly be regarded as saturated for its full depth of nearly 80 feet, especially since the surface of the rock was about 30 feet below sea level. Through these permeable deposits the excavation was carried down of such size as to expose an area of at least three acres of the underlying gneiss and limestone; and as some of the latter was found to be badly eroded and fissured, it was removed in places to a further depth of 50 feet, thus making a total depth of about 130 feet below the original surface of the ground in the bottom of the valley. For seven consecutive months in 1896, beginning with May, the drainage water was pumped from a depth of 118 feet and for the following three months the depth ranged from 118 to 130 feet, the maximum continuing for a period of about one month (January, 1897. The daily quantity pumped during the progress of the work increased generally with the depth of the excavation until July, 1896, when it reached an average of 5,600,000 gallons from a depth of 118 feet. From July to December, however, it gradually reduced to 4,000,000 gallons per day, thus indicating an exhaustion of subterranean storage; but soon afterward it began to increase again, and reached its next average daily maximum of 6,200,000 gallons in August, 1897, the depth of the excavation having then been reduced by the back filling to 92 feet. The maximum pumpage in one day did not at any time exceed 7,000,000 gallons, nor did the river overflow its temporary channel during the entire period. It was also found that a considerable time elapsed between the rainfall and its effect on the pumps. In certain cases this interval was as long as two months.

In concluding this part of our subject, a few general observations compiled from various sources, and also from the foregoing table, may perhaps be of interest. Mr. John T. Fanning, C. E., remarks that deep wells east of the Alleghany Mountains, and especially in eastern New England, have not generally been successful in either quantity or quality of the water.§ Mr. Jas. Owen, C. E., states that the normal delivery of 4-inch wells from 70 to 100 feet deep in the red sandstone strata of New Jersey, is about 30,000 gallons per day, or about the same as the average yield of 2-inch wells in the several plants of the Brooklyn Water Works.†† Mr. John Shaw, C. E., of England, states that there are many wells in the London chalk basin that yield only 20,000 gallons per day.* In one of the recent U. S. Geological Survey reports it is stated that in 1890 there were 8,097 artesian wells in fourteen of our western states and territories, which have an average depth of 210 feet and an average yield of 78,400 gallons per day; and in a communication printed in "Engineering Record," Vol. 14, p. 249, (1886), it was reported that the average flow of about 80 artesian wells from 260 to 900 feet deep in and near Denver, Colo., is 36,000 gallons per day. From the aforesaid table, the following average yields of wells of different size and moderate depths in sandy and gravelly subsoils have been deduced:—2-inch wells from 22 to 60 feet deep at Cohasset, Hyde Park and Westboro, Mass., Brooklyn, N. Y., and Fort Worth, Texas, 7,000 to 34,000 gallons per day; 2.5-inch wells from 27 to 67 feet deep at Lowell and Methuen, Mass., and Schuyler, Neb., 11,000 to 27,000 gallons per day; 3-inch wells from 50 to 125 feet deep at Pleasant Mills and Sea Bright, N. J., 36,000 to 54,000 gallons per day; 4-inch wells from 60 to 380 feet deep at Pensacola, Fla., Great Bend, Ind., Brooklyn, N. Y., and Sea Isle City, N. J., 43,000 to 126,000 gallons per day; 6-inch wells from 30 to 280 feet deep at Columbus, Dayton and Franklin, Ohio, Brooklyn, N. Y., Pensacola, Fla., and Topeka, Kan., 150,000 to 360,000 gallons per day; 7-inch wells from 50 to 70 feet deep at Leipsic, Germany, 50,000 gallons per day; 8-inch wells from 23 to 151 feet deep at Terre Haute, Ind., Camden, N. J., and Brooklyn, N. Y., 113,000 to 880,000 gallons per day.

It may also be added that the wide differences thus exhibited in the yield of similar wells in the same class of water-bearing formations, serve to emphasize the remarks previously made concerning theoretical estimates of the supply that may be obtained from deep subterranean sources; and hence, until a much larger fund of information relating thereto becomes available, it will be proper to regard the development of a public water supply from such a source as being attended with much uncertainty and chance.

†From description of plant in "Engineering News," June 8, 1893.
††"Engineering Record," April 17, 1897.
*For description of plant, see "Engineering News," September 12, 1891; also same publication of September 15, 1892; also "Engineering Record," April 17, 1897.

†"Engineering News," January 10, 1886.
††"Engineering Record," Vol. 14, p. 249. (1886).
§"Engineering Record," Vol. 14, p. 372. (1886).
*"Revue Scientifique," Vol. 41, p. 241. (1888); also "Trans. Inst. C. E.," Vol. 94, p. 338.

†"Engineering News," April 6, 1889.
††Trans. Am. Soc. C. E., Vol. 31, 1894.
§"Water Supply Engineering," by J. T. Fanning.
*Proc. Inst. of C. E., Vol. 90.

Streets and Lighting.

Mixing Concrete.

By E. H. Allman.

I cannot say that I approve of concrete mixed by hand, as it is seldom ever mixed properly. I prefer mixing by machinery, if it can be done. It matters not how small the machinery is, for when it is done this way it is well done. The trouble when mixing with hand is that it is most all the time done in too great a hurry, and the material is in spots. If it is to be done by hand, the proportion of sand should be placed evenly over the mortar-bin dry, and the proportion of cement spread evenly over the sand; mix the two together well; after they have been well mixed, spread the whole mass evenly over the mortar-bin and add the proportion of rock or gravel. Then mix the whole together dry.

After the whole has been well mixed, draw the center to the sides, then add enough water to mix thoroughly. If you make the mixture too wet you will cause the concrete to quake when you tamp it. When the concrete is in this condition you do it more harm than good to tamp it, for this reason: when you tamp concrete in this condition you draw the sand to the surface; the cement being the heavier of the two, will sink to the bottom, and make streaks of sand through your work. When adding the water decide on the amount you will need, and keep this proportion all through the work. If you keep changing you will always be in trouble; one batch will be too dry and the next too wet. The proportions for concrete should always be measured and not guessed. The concrete should have the appearance of freshly dug earth when properly prepared to be placed in position.

In tamping concrete the tamping should be well done. Tamp well enough to just draw the water to the surface, and then stop. All work in concrete should be laid in sections. You will get better results and fewer cracks, for it allows each section to contract, and it is then not so liable to crack. It is not a wise plan to remove the forming too soon from the concrete, because the cold air will strike the sides and make it contract too fast, which will cause cracks.

I have had a great deal of experience in testing natural and imported cement, and in making and placing concrete in position. I have been a close observer of the results obtained from the different conditions of the concrete, and have seen the good and bad results of the management.

The foregoing rules are recommended to any one contemplating making and laying concrete. To prove to any one working natural or imported cement that my assertion is correct I give the following examples: Natural cement, 4 ozs. to 1 1-4 ozs. of water. Then your briquettes will be a solid mass, free from voids; double the proportion of water to the briquettes, and you have them full of voids and resembling a sponge. The latter is the cause of so many concrete walls and floors in buildings leaking—too much water and too much sand in streaks, making a sifter instead of a solid mass.—"Clay Record."

Shell Rock Pavement.

The city of Columbus, Ga., is experimenting with a new kind of material for road-making, known as shell rock. Superintendent Robert L. Johnson says of it, in a communication to "City Government:"

"The use of this material for constructing street pavements is something new—its road making qualities having been rather recently discovered. While our use of it is not altogether an experiment, it cannot be said that its value as a permanent paving material has, as yet, been fully determined. Our street committee was induced to use it after carefully inspecting and investigating some pavements in Macon laid with the same material. Macon has several miles of streets paved with it, some of which have been in use over two years, and so far it shows very little, if any, appreciable deterioration or wear.

"The material is what I have chosen to call a 'shell rock,' as it is composed almost entirely of shell fish and other crustaceous marine animals which were deposited years ago in certain geological formations, and have become solidified and petrified into a mass of soft rock. The particular deposit from which is obtained the 'rock' used in the pavements in Macon and Columbus is situated about thirty miles south of Macon, in Houston county, on the Georgia Southern and Florida Railroad. It is quarried or mined, in open cut, very much the same as other rock or hard material is handled, that is by drilling and blasting. It is then run through a crushing machine, just as other rock is crushed for paving purposes, when it is ready for putting down on the roadway. To construct the pavement all that is necessary is to lay the crushed rock on the prepared road bed to the desired thickness, and then rolling until it is smooth, hard and firm, a medium weight roller being best for this purpose; and my experience showed that it did not require very much rolling to make the mass solid and compact and render the surface smooth and firm."

Testing Portland Cement in Holland.

When passed through a sieve with 900 meshes per square cm. the cement should not have more than 10 per cent. of residue. The setting should take at least two hours. The test is performed in an ebonite ring 40 mm. high, with mortar of normal consistency—i. e., so stiff that a 300 grm. steel rod of 1 square cm. sectional area will penetrate the freshly prepared mass (in the ring) to within 6 mm. of the bottom. Setting is considered to commence when the testing needle —1.2 mm. diameter, and weighted with 300 grms.—will not penetrate quite through the mass, and as ended when the needle will no longer make any impression.

CONSTANCY OF VOLUME.—A cake of the cement placed on glass and protected from drying for hours should not crack or change in shape in the air or under water, even after prolonged storage.

TENSILE STRENGTH.—The test blocks—octagonal blocks of 5 square cm. minimum section, and compression cubes of 5 square cm. side are prepared from 1 part by weight of cement, 1 part of normal sand, and 0.3-0.4 part of water. After exposure to moist air for 24 hours, and 27 days' storage in water 15 C., they must exhibit a breaking strain of at least 16 kilos per square cm. and a compression strength of at least 160 kilos per square cm. In case the test is performed after six days, the above minimum standards are reduced to 10 and 100 kilos respectively. For pure cement, without mortar, the minimum breaking strain for a six test is 25 kilos, and for a 27th day test 35 kilos. The mean of the six highest values out of 10 tests shall be taken as the breaking strain, and the mean of the three highest out of five tests as the compression strength.—"Clay Record."

Buffalo's Bad Pavements.

The Courier's photographic exposure of the scandalous condition of the city's asphalt pavements has brought the people of Buffalo to a fuller realization of the real seriousness of the paving situation. With the Pan-American hardly a year away and the persistent lack of official activity on the part of the city, Buffalo promises to disgrace herself next year. The millons who will come to the Pan-American should see the city in her best dress. With half her streets impassable to bicyclists and useless to vehicles, if a faster pace than a walk is desired, what will those millions say? It might be a blessing to the city to land them at the Exposition grounds and keep them busy there, if the streets are not to be repaired.

Miles upon miles of asphalt surface in the city is in the condition which the Courier has pictured. The public has awakened to the fact that something should be done—must be done, if Buffalo is not willing to bring lasting ridicule upon her boasted municipal prosperity.

Under the present paving schedule less than a dozen streets will be paved the coming summer and a few more late in the autumn.—"The Courier," Buffalo.

THE PAVING QUESTION.

EXPERIENCE MEETING OF C. E.'s CONTINUED—COMPARATIVE DURABILITY AND DESIRABILITY OF PAVEMENTS.

The timely topic of pavements is continued in this number of "City Government." Many City Engineers contribute their valuable experience for the benefit of our readers. With reference to the comparative durability and desirability of pavements the City Engineers speak as follows:

OTIS F. CLAPP, Providence:

"For heavy traffic, I prefer granite blocks laid upon concrete base and joints filled with pea gravel and paving cement; for medium traffic, sheet asphalt, and next in order brick, on concrete foundation with joints filled with paving cement."

C. A. VAN KEUREN, Jersey City:

"With reference to the comparative durability and desirability of the several classes of pavement, trap rock or granite specification block, laid on Portland cement concrete base is the most durable pavement. The most desirable, for residental portions of the city and upon streets that are not subjected to heavy traffic and where there are no railroad tracks, and all other conditions considered, is alphalt pavement. A large percentage of the pavements laid in our city during the past two years, has been asphalt with a guarantee of five years upon assessable improvements, and ten years where repaving is done payable by the city at large.

"As to macadam pavements, the least said the better. Every one knows of its disagreeable features and while it is true that we have fifteen miles of this class of pavement in our city, this mere fact does not counteract the arguments against it. The cost of maintenance is very high with no apparent good results and it seems a waste of money to further this kind of pavement."

J. H. DINGLE, Charleston:

"Granite blocks, most durable; asphalt, most desirable."

FRANK H. OLMSTEAD, Los Angeles:

"I consider asphalt the most durable and desirable for street paving."

CITY ENGINEER SLOCUM, Springfield, Mass.:

"Vitrified brick is giving us better satisfaction than any other material."

HARVEY LINTON, Altoona, Pa.:

"Asphalt block, on six-inch concrete foundation is the most durable pavement we have. It is, also, the highest in first cost. Sheet asphalt is the most desirable, but it should never be laid except under a ten or fifteen-year guaranty—the contracting company to put the paving in perfect condition every spring during the period it is liable for the repairs. The gutters should be of vitrified paving brick."

GEORGE TURNER, Bay City, Mich.:

"In my opinion, brick pavement is the most desirable for this locality."

JOHN W. PAYNE, Akron, O.:

"Brick seems to be the most durable material we have and by far the cheapest. We have used brick for ten years and never spent one cent for repairs. I think block asphalt is the most desirable pavement, where people can afford it, having all the merits of brick as to wear, etc., but being less noisy. The cost, however, is much more than that of brick."

FRANK H. HAMILTON, Springfield, Ill.:

"Brick pavement has given the best satisfaction here in regard to durability and desirability. Asphalt has not as yet been tried."

R. M. NEWMAN, Jackson, Miss.:

"The asphalt we have is not satisfactory. For towns of this size, 25,000 to 30,000, where the traffic is light, or moderately heavy, a good brick pavement appears to me the most desirable; and will, I think, prove the most durable."

G. B. PIKE, Kalamazoo:

"The durability of cedar block pavement in this city is not to be compared with brick. The cedar block pavement remains in good condition for only a few years. No more of it will be laid here. All of the cedar block has been laid since 1888 and previous to 1892."

W. A. OSMER, Logansport, Ind.:

"I believe brick to be the most durable and most desirable for business streets for cities of our size (20,000 population); asphalt the most desirable for residence district."

H. M. MILLS, Michigan City, Ind.:

"Brick on concrete is the only thoroughly satisfactory pavement we have. We have no asphalt."

J. N. WOLFE, Lancaster, O.:

"Some of our pavements have been down ten years without repairs. Brick, for towns of this size—12,000 to 20,000—is the most desirable and cheapest in my opinion."

A. C. LOOMIS, Mattoon, Ill.:

"Brick pavement, on concrete foundation, will lead without doubt."

Glass Paving Brick.

The Garchey glass paving blocks laid down in Lyons (France) recently, according to a French technical journal, appear to wear very well, only a few having become chipped. The blocks have a superficial area of about 64 inches, the face being divided into 16 squares by cross furrows, so as to afford better foothold. They are set close together to prevet percolation, and are stated to be more durable than granite, whilst cleaner than wood blocks or asphalt. A large factory has been erected near Lyons for the production of these blocks, as well as plain and ornamental blocks for building purposes. This glass stone is made from bottle glass and window glass cullet, is crushed in a mill, sifted, and slowly heated for an hour in cast-iron moulds, to de-vitrify the glass and convert it into a very viscid, pasty mass, which is then heated for a few minutes in a furnace at 1,300 deg. C., and pressed by hydraulic power. According to the color and fineness of the materials, the appearance of various kinds of stone can be imitated. From official tests, it appears that the glass stone will resist a pressure of 2,023 kilos per square cm., whereas granite will not stand more than 650 kilos pressure. It also (says J. Heurivaux in "La Ceramique") withstands the action of cold, sample plates cooled to 20 deg. below zero resisting a pressure of 2,028 kilos per square cm. In point of resistance to attrition, the new product is found to be superior to St. Raphael porphyry, and twice as good as Comblanchien building stone. A 4.2 kilos weight falling from a height of 1 metre effected the fracture of the blocks after 22 blows, whilst similar blocks made from blast furnace slag and Cherbourg quartzite were broken at the 19th blow. The tensile serength is 15.3 kilos, blocks measuring 50 by 33 cm. requiring a force of 25,000 kilos to tear them asunder. Among the advantages claimed for glass stone for building purposes are its non-porosity, insulating power, insusceptibility to atmospheric and other influences, cheapness and hardness, the latter being so great at to necessitate the tempering in mercury of the cutting tools used in working the stone. As a street-paving material it is able to stand any vibration of traffic, is easy to clean and hygienic, whilst "the pavement does not become slippery."—"Clay Record."

—The ordinary sprinkling carts are to be dispensed with in the macadam section of Geneva, N. Y., and crude oil will be sbstituted for water. Only two or three sprinklings are required a season, and the expense is less than the old way.

Sewers and Garbage.

Garbage Items.

Commissioner of Street Cleaning Iglehart of Baltimore proposes to follow the example of other large cities and sell the carcasses gathered from the city to the highest bidder.

* * *

The city of Rochester, with an estimated population of 180,000, pays $1,575 per month for the collection and disposal of its garbage. Contractor Kimmel, the successful bidder, will employ fifteen teams, some of the trucks of which will be rubber tired.

* * *

Agent H. H. Knapp of the Health Department of Lowell, Mass., has collected the following statistics showing the per capita cost of collecting ashes and garbage in the leading cities of the State: Boston, $1.20; Worcester, .36; Fall River, .62; Cambridge, .73; New Bedford, .64; Lynn, .66; Lowell, .45. The city of Worcester collects no ashes, compelling the citizens to do it at their own expense. In nearly every city the collecting of both ashes and garbage is done by contract.

Sewage Disposal Wanted.

The city of Marshalltown, Iowa, is compelled to construct a plant for the disposal of its sewage to prevent further damage suits. Mayor Frank G. Pierce, associated with three other gentlemen, has been making a thorough investigation preparatory to receiving bids for the work. After weeks of labor the preliminary report of the committee has just been submitted. It is a pamphlet of thirty-six pages, containing all the technical and general information necessary for the submission of an intelligent bid. All plans submitted must be on a basis of caring for 2,000,000 gallons of sewage every twenty-four hours.

"Garbage Can Opening."

When the garbage can remains unemptied for several days, the usual method followed is to call on the proper official with a club. An ultimatum is delivered on the spot,—with a vehemence which threatens to bring on apoplexy,—to the effect that unless the offensive can is emptied within twenty-four hours there will be a funeral in that public official's immediate vicinity. This is the old, but seldom successful, manner of getting what you want.

A citizen of Davenport, Ia., uses a milder, but more effective, means. When his garbage can is neglected he mails the following invitation, which never fails of a prompt response:

"The pleasure of your company is requested Wednesday afternoon, April 25, at a garbage can opening at 1,015 East Thirteenth street.

C. M. HOLMES."

"R. S. V. P.

Dayton's Crematory Report.

Dayton, O., is one of the cleanest cities in the country, a reputation which is maintained at a comparatively small outlay. Its thirty miles of paved streets are cleaned at the slight expense of $10,854 per year, which is at the rate of $150 per 10,000 square yards. The operation of its garbage incinerator is conducted upon an equally economical basis, as the following report of the efficient superintendent, T. J. Bacus, will show:

"Receipts for the year, ending February 1, 1900: From sundry persons, for burning night soil, 6,754 barrels, $1,350.80; from sundry persons for burning offal from groceries, slaughter houses, commission houses, hotels, etc., 1,984 barrels, $379.01; total, $1,729.61.

"The crematory is operated by three men and the operating expenses for the year have been as follows: Labor, $1,719.75; fuel, $4,278.66; grate bars, $2,076.25; total, $8,074.66.

"The amount of garbage consumed during the year is as follows: 1,363 two-horse loads, or 41,505 barrels; 1,420 one-horse loads, or 23,276 barrels; total destroyed free, 64,781 barrels; total destroyed, pair for, 8,738 barrels; number of dogs consumed, 892."

—The Supreme Court of California has held in the case of Lampe vs. City of San Francisco (57, Pac. Rep., 361) that a city is not liable for damages caused by the obstruction of the flow of surface waters from land abutting on a street, occasioned by the necessary and lawful grading of the street. In this case the plaintiff alleged that the city had raised the level of the street, thereby causing an embankment in front of his lot, which impeded the natural flow of the surface and other waters from his premises, and that by reason thereof the basement of his house had become damp and unwholesome. The complaint was demurred to, on the ground that the facts stated did not constitute a cause of action, and the court sustained the demurrer, saying that 'the municipality is not bound to protect from surface water those who may be so unfortunate as to own property below the level of the street.

Parks.

Injurious Insects.

The many people who are interested in the growing of trees, grains, grasses, flowers and vegetables, have long ago learned that nature can not be depended upon to bring about the best results, unaided. For instance, nature's insects some of them at least, are prone to destroy some of nature's most valued works. With the gradual disappearance of our woods and the resulting scarcity of our feathered friends, the birds, these insects in many localities seem to be getting the upper hand, and artificial means must be used to get rid of them. It is becoming a universally recognized fact that there are few "bugs" which can not be reached by some remedy, when their presence becomes a menace to the work of the agriculturist, horticulturist and florticulturist. The most successful of the people engaged in these lines of business are those who take advantage of every opportunity offered them of learning the appearance and habits of these enemies of theirs, and the best way to destroy them.

Much depends upon knowing the forms of the various injurious insects in the several stages of their development, for what might easily fall a victim to some destroying agent, while in a primary form, may pass into a form which would not be susceptible to such an agent.

The little insects we see do not grow into the larger ones of similar shape, but each moth, butterfly, beetle or bug must have passed through three distinct and very different forms before reaching maturity, and this final form is is the one in which the insect remains until it dies. It does not increase in size after it passes from the third form into the final. First is the egg, minute in size, but of regular shape and size; second, the larvae (meaning a mask) or worm or caterpillar, which feeds upon animal or vegetable matter, and is responsible for the damage done by insects; third, the pupa (meaning a baby or doll), which is harmless, quiescent state in the development; and lastly, the perfect insect.

The insect in this state, which is the harbinger of spring, and is the handsomest of our butterflies, is the antiopa (Vanessa Antiopa, Linn). But while we admire its rich colors in April and May, it is flitting around over our elm, poplar and willow trees, depositing its eggs. Then early in June we see these trees occupied by broods of little black caterpillars, minutely dotted with white, with a row of eight dark brick-red spots on the top of the back. The head is black and rough, with projecting short points; the spines, of which there are six or seven on each segment of the body except the first, are black, stiff and branched, and the intermediate legs are reddish. When fully grown, these caterpillars measure one and three-fourths inches long, and are exceedingly formidable in appearance.

Contrary to the belief of many persons, the caterpillars have no means of inflicting a venomous wound. A second brood of them appear in August. They are rapacious eaters and one bunch of them can strip a tree of its entire foliage, leaving the once graceful boughs stiff and straight in their nakedness. On small trees the caterpillars can be picked off by hand, if the work is done when they are first noticed, before they have had an opportunity to spread over the entire tree. In large trees, the best means is to saw off the limbs afflicted, if that can be done without seriously injuring the tree. Burning with torches hurts the tree more than does the cutting off the limbs, when the latter operation is done carefully. Prompt and energetic measures upon first appearance, only, are successful in saving the foliage from destruction.

The Antiopa caterpillars seek quiet corners in trees and buildings, where they quickly change into the third state, the pupa or chrysalis, and remain in that form for ten or twelve days. Then the shell cracks open and from it issues the fine brown, blue and yellow butterflies that cheer us so much in the spring. They expand from three to three and one-half inches; the wings are purplish brown above, with a broad, irregular margin of buff yellow. Inside of this yellow margin is a band of darker brown, which incloses a number of roughly shaped pale blue spots. The under side of the wings shows the yellow marginal band, with the remainder of the surface a silky, lusterless black. These butterflies pass the winter in sheltered places in a semi-torpid state, and make their appearance with the first warm days of spring.

The Forest Tent-Caterpillar.

Last year the forest tent-caterpillar was unusually destructive, its ravages extending over a wide area, covering several states. The caterpillars feed upon the foliage of a large variety of forest, shade and fruit trees. The life history of the insect is similar to that of the apple-tree tent-caterpillar except that the forest tent-caterpillars do not build conspicuous nests. The insect may be successfully combated in all of its stages, but under most circumstances, is especially susceptible in the caterpillar stage. Mr. V. H. Lowe, of the New York Agricultural Experiment Station, Geneva, N. Y., in a communication to "City Government," offers the following suggestions for combating the insect:

"Owing principally to the fact that the caterpillars attack a large variety of trees, this subject is a somewhat complicated one. In badly infested localities, however, it has three distinct phases. First, combating the insect in the forest; second, combating the insect when attacking shade trees; and third, combating the insect in the orchard. We will discuss the subject under each of the three heads reversing the order given above.

"Combating the insect in the orchard, destroying the eggs: After the leaves have dropped the egg masses are somewhat conspicuous. When pruning the trees they should be carefuly looked for and destroyed. If the orchard has been badly infested it will pay to make a special search for them.

"Destroying the caterpillars: Many methods have been suggested for destroying the caterpillars but there are three especially feasible ones, which, if carefully carried out, will usually prove effectual.

"First, spraying with an arsenical compound: any good arsenical compound will answer the purpose if applied before the caterpillars are half grown. Some of the principal arsenical insecticides are Paris green, green arsenite and aresnite of lime. A sion of green arsenite and arsenite of lime see Bulletins 143 and 152 of this Station. A third arsenical, arsenate of lead, has been found by the Gypsy Moth Commission of Massachusetts, to be especially effectual against the gypsy moth and to be almost harmless to foliage. The formula is as follows: Eleven ounces of acetate of lead, 4 ounces of arsenate of soda, 150 gallons of water. The directions for making arsenate of lead as given by Professor C. H. Fernald, are as follows: 'Arsenate of lead is is easily prepared by putting eleven ounces acetate of lead in four quarts of water, in a wooden (not metal) pail, and four ounces of arsenate of soda (50 per cent.) in 2 quarts of water in another wooden pail, and when entirely dissolved mixing them in a hogshead containing 150 gallons of water, when a chemical reaction will take place forming arsenate of lead in a fine white powder in suspension in the water. If cold water be used in the wooden pails, the solution of the acetate of lead will require a little time, but, however, if the water be hot, it will dissolve very quickly. It is customary to add from 2 to 4 quarts of glucose to the above amount of water. If it is desired to use larger proportions of the arsenate of lead, it is only necessary to use more acetate of lead and arsenate of soda, but always in the proportions given above.' To ensure success in spraying two points should be kept in mind, namely, promptness and thoroughness. The poison will be much more effective if applied before the caterpillars are one-fourth grown and of but little avail if the application is delayed until they are half grown.

Second, destroying the caterpillars when they have assembled upon the trunks or large branches: This may be done in any convenient way. A very easy way is to crush them with an old broom, which, to insure the death of all the caterpillars it touches, has been dipped in kerosene oil. The kerosene oil is fatal to them, and if preferred may be sprayed directly upon them.

"Third, jarring and banding: Jarring is seldom practical except with small trees. The tree should be given a few quick, sharp raps with a padded mallet. The caterpillars will drop at once and may be collected and destroyed in curculio carts or upon sheets spread upon the ground.

"Banding is for the purpose of preventing those caterpillars that have been jarred off by the wind, or by birds, or have left the tree during the restless period just previous to pupating from again ascending the trunk; also to protect the trees from invading caterpillars, especially when the orchard is situated near infested shade or forest trees. The bands may be made of cotton wool in which the caterpillars will become entangled, or better by some sticky substance such as tar mixed with two parts of raw oil, or with raupenleim. Either of these substances should be smeared upon bands of paper at least a foot wide, which can be tied around the trunks of the trees. By using the paper there is no danger of injury to the bark. Sticky fly paper is sometimes successfully used in the same way. The caterpillars will be caught upon these bands and soon die. Where the caterpillars are very abundant so many will be caught upon the bands that other caterpillars can crawl safely over them. In such an event new bands will have to be supplied or the originals made wider. Of these sticky substances, raupenleim is one of the best. It should never be directly applied to the bark.

Collecting the cocoons: Many of the cocoons are spun in places where they can be easily reached. In collecting and destroying them many useful parasites would be destroyed but in case of a serious outbreak the thorough collecting of the cocoons would accomplish more immediate good than the parasites. It would, however, be but little trouble to place the cocoons under a coarse netting and leave them until the parasites had escaped. The netting should be too fine to allow the moths to pass but coarse enough to allow the parasites to escape.

"Capturing the moths: As previously stated the moths fly at dusk or later. They are attracted by a bright light, and may be captured by placing a lighted lantern over a tub of water, over which enough kerosene oil has been poured to make a thin film. The moths flying about the light will fall into the water. While this method may be of some value it is doubtful if many female moths will fly to the light before having deposited their eggs, after which, of course, it makes no difference whether they are attracted to the light or not.

"Combating the insect when attacking shade trees: All of the methods just described can be used to check the insect when attacking small shade trees. For large trees banding is of much value. In some of the villages in which the caterpillars were abundant last spring, they were dislodged from the large trees by streams of hydrant water and prevented from going back up the trunks by the sticky bands. For spraying the large trees special apparatus is required. Steam power is usually used. A suitable outfit can be purchased for from about $200 up. The increase of shade tree insect pests and diseases make it almost necessary for a village to own a spraying aparatus to ensure the preservation of its shade trees.

"A method of combating the insects which has been tried with success is to encourage the school children to collect the egg masses by paying them a reasonable price per hundred. This may be done by the private individual or by the village or city authorities. In either case the expense would be trifling in comparison with the good accomplished.

"Combating the insect when attacking forest trees: When the caterpillars occur in such great numbers over such wide areas of woodland as they did last spring it is difficult to devise a method of destroying the caterpillars that would be practical for individual farmers to undertake. Banding the trees will be of much value. Also with comparatively little work many of the caterpillars which have assembled on the trunks can be destroyed. Whatever is done a united effort will be necessary to give the best results."

"The injunction proceedings instituted by the Consumers' Light and Power Company vs. the city of Little Rock, Ark., to restrain the city from collecting a fee of 50 cents per pole on each pole used by said company, has been decided by the chancellor in favor of the city, which decision has been accepted by the said Consumers' Light and Power Company, which company has paid up all sums due under said ordinance."

—The Supreme Court of North Carolina, in February term, 1900, affirmed the right of county and municipal authorities to enforce compulsory vaccination. Salus populi suprema est lex—"the public welfare is the highest law"—is the foundation principal of all civil government. It is the urgent cause why any government is established. Four Supreme Courts—North Carolina, Georgia, Texas and Indiana—have now decided it is legal and just to compel vaccination in order to protect the public health.

Trees and Parks in Cities.

The conspicuous absence of trees from the residential streets of modern New York is hard to explain. Rich men who live here only during the winter appear to take very little interest in their fellow-citizens who are compelled to remain in town all summer. In some instances, indeed, the absence of trees in front of houses situated upon our park and river fronts seem to suggest a fear on the part of the owner that foliage might obscure architecture, apparently oblivious of the fact that the beauty of a dwelling is frequently enhanced thereby. As it is, few of our side streets are embellished with vegetation; and even along the Boulevard—an avenue highly favored by nature—the trees are neglected. This is also true of Seventh avenue above Central Park, St. Nicholas avenue, and of all other thoroughfares not placed under the jurisdiction of the Park Commissioners—a body which should be authorized to exercise control over every avenue upon which the preservation of the trees is desirable. Except in front of St. Luke's Hospital, Morningside Drive, which is the glory of upper New York, is to-day barren of trees on its western side; while on the historic King's Bridge Road the few trees still remaining are sadly neglected. What must we think of a corporation that recently spent the enormous sum of $7,000,000 on the construction of the Harlem Speedway, without exercising sufficient foresight to provide that fine avenue with a row of shade-trees for the protection of riders and drivers and their horses?—Louis Windmuller in the May "Forum."

Finance.

Uniformity in Tax Appraisement.

The municipal association of Cleveland is one of the most useful, practical and original in its work for the betterment of civic conditions. Its latest bulletin urges the citizens of Cleveland to see to it that the decennial appraisement of property be made with some idea of obtaining justice for all concerned. To this end the association suggests that:

"If a movement of this kind is to be a real value it is necessary not only that each neighborhood should be organized to escape unjust taxation and secure a proper valuation, but that there be a central body formed to see that appraisers in all the wards are working on the same basis of valuations. The instructions of the county auditor to the appraisers are that property should be listed at its "true value in money." Some appraisers, however, may consider 60 per cent. valuation sufficient. In this event the property owners of one ward would be paying a greater proportion of taxation than the property owners of another. An interchange of thought on this question cannot but result beneficially to all concerned and concerted action on the part of the taxpayers will secure relief now where it will entirely fail after the appraisers have placed their valuations upon the books, as the board of equalization can only afford relief to the extent of shifting valuations.

"Let citizens, therefore, in every neighborhood where they own property organize an appraisement club, form a membership, if necessary elect officers; at any rate appoint an intelligent, fair minded committee to make valuations of all property in the neighborhood and meet with the appraisers to compare notes.

"Let each organization appoint a representative, preferably the chairman of the appraisement committee, to a central body, which will be organized with the progress of the work.

"Let the District Improvement Associations now in existence, civic clubs and other citizens' associations take the matter up and start work along the lines indicated."

DEPARTMENT OF INQUIRY.

The Editor of "City Government" will undertake to furnish, through this department, replies to all inquiries pertaining to municipal affairs sent in by subscribers.

Side-Walks Cleaned by General Tax.

Town Hall, Westmount, Canada,
April, 19, 1900.

Editor of "City Government:"

I notice in the April number of "City Government" an inquiry made by Mr. F. M. Willis, of Ithica, N. Y., regarding the cleaning of sidewalks at public expense. In reply I beg to give the following information:

The sidewalks in the Town of Westmount, Canada, adjoining the city of Montreal, are cleaned by the municipality and the money required to meet the expense is taken out of the general revenues of the town, raised by an annual assement of six mills on the dollar on the valuation of the real property of the town. This assessment of six mills also covers police, fire, water, light and other departmental expenditures, also for the cleaning and maintenance of streets, public parks and municipal buildings.

Our assessed valuation is $10,000,000.00 and our population about 9,000. We have about twenty miles of sidewalks to keep clear of snow and ice during the whole of our Canadian winter. The work is done by day labor under the direct supervision of our superintendent of works, assisted by foremen of gangs. The men are paid so much per hour during the time they are employed. Our sidewalks are all wooden and average from four to eight feet wide, and the only cleaning (beyond repairs) is the removal of snow and ice. The average cost during the past three winters has been $61.00 per mile of sidewalk.

After a fair trial we consider the plan of municipal care of sidewalks to be the best, both for the town and the fronting proprietors, and also for pedestrians.

In the city of Montreal, where the cleaning of snow and ice is left to proprietors, it is never properly or uniformly attended to; as a consequence at certain seasons of the year walking is disagreeable and the city has to meet numerous claims for accidents, caused by the bad condition of its sidewalks.

WILLIAM MINTO, Secretary-treasurer.

This is comparatively a departure from time-honored customs and we would like to have the experience of others along the same line.—[Editor of "City Government."

Iowa's New Assessment Law.

Mr. C. E. Campbell, a member of the Board of Public Works of Des Moines, replying to an inquiry from CITY GOVERNMENT, said:

"The matter of legislation touching paving assessments will be left with a temporary amendment to the existing law, and the appointment of a joint commission of the House and Senate to revise the municipal legislation, including that relating to paving assessments. The bill for the commission has already passed the Senate. The temporary legislation proposed is as follows:

"Section 1. When any city or town council or board of public works levies any special assessment for any public improvement against any lot or tract of land, the same shall be in proportion to the special benefits conferred upon the property thereby and not in excess of such benefits. Such assessment shall not exceed 25 percentum of the actual value of the lot or tract at the time of levy.

Sec. 2. If the special assessment which may be levied against any lot or tract of land shall be insufficient to pay the cost of the improvement, the deficiency shall be paid out of the general fund, or out of the improvement fund provided for in sub-division 2 of section 894 of the code. If there be property against which no special assessment can be levied, the proportion of such assessment belonging to such property shall be paid in like manner.

"Sec. 3. So far as applicable, sections 821, 822, 823, 824, 829 and 839 of the code shall govern all special assessments made in cities and towns unless otherwise specially provided. Upon appeal the court shall determine all questions, including that of benefits to the property assessed.

"Sec. 4. Nothing in this act shall be constructed to interfere with the enforcement of the provisions of sections 834 and 835 of the code.

"Sec. 5. This act shall apply to cities acting under special charter."

Telephone Ordinances Wanted.

Binghamton, N. Y., April 24, 1900.

Editor of "City Government:"

Have you any literature on cities granting telephone franchises? Binghamton has been asked to grant a telephone franchise, but the promoters want the city to give it to them for nothing. Some of the aldermen think the city should be paid for the franchise. If you have any literature or statistics bearing on the subject we would be glad to have them.

Several Aldermen.

The Editor has supplied some information, but more ordinances granting telephone franchises are wanted. Will not our readers send copies of similar ordinances to this office?—[Editor of "City Government."

A Peculiar Case.

Boston has an ordinance restricting the height of buildings, which has recently been put to the test and sustained by the courts. A woman of means, who owned one of the finest buildings in Copley square, in one of the most desirable sections of the city, sued the city for damages, because she was not permitted to derive additional revenue from it by adding several stories to its height. Her property is a five-story building, with seventy feet front. She had experts who testified that on the basis of 125 feet as the limit of height of a building under a general law the act had deprived her of a right to build three stories higher, which would realize as an investment about $1,000 a floor a year. The capital on this income the experts variously estimated at from $17,000 up to $27,000, which they variously gave as their opinion of the amount of damages, being the amount the market value of the land had been reduced by reason of the restricted height named in the act.

The attorney for the city contended, on the other hand, that the restriction was a benefit to her land, and that taking into account the frontage and size of her lot, as well as the location of it in the block, and the cost of doing what was claimed for her could be done to realize as an investment out of such a building above the restricted height, the plan was impracticable, and she could not have sustained any injury. The city's experts said the law was a benefit and the jury thought so, too. The lady in the case has thus been forced by the courts into the belief that it is a decided benefit to her property to have the height of her building restricted to five stories.

—The city authorities of Omaha have found that the "popular loan" idea of floating municipal bonds does not work, at least in a city of Omaha's size, character and location. On March 3 the city began the advertising of a proposition to sell $25,000 worth of $50 short term bonds bearing 3 1-2 per cent. interest, for the benefit of the paving intersection fund. The idea originated with Councilman Lobeck, a member elected as a silver republican, but virtually an acknowledged populist. The subscription books were closed March 26, on which date the subscription book bore the name of but one subscriber, Mr. Lobeck. He had offered to take ten bonds, the full number allowed to one person under the ordinance creating the issue. The result of the experiment is of more than ordinary interest on account of the fact that Lobeck has heretofore been an advocate of the plan of issuing one-third of the $3,000,000 waterworks bonds voted at the election just passed in the form of a "popular loan," the bonds to be of the denomination of $100. The scheme has now been practically abandoned.

Wanted: Information About Garbage Plants.

—— May 2, 1900.

Editor of "City Government:"

Our city is about to put in a crematory for the disposal of garbage. Having been much interested in articles upon that subject which have appeared in "City Government," naturally I turn to you for the latest information. Our population is about 25,000. I have been delegated to look up the matter and any information you may give will be highly appreciated. A. H. D.

In addition to other information which we have sent to this inquirer we would like to have our readers send us the experience in their cities, including annual reports of the plants in operation.—[Editor of "City Government.

No Exclusive Franchises.

In an opinion rendered by Judge Brannon of Charleston, W. Va., in the case of the Clarksburg Electric Light Company the State Supreme Court holds that a municipal corporation cannot grant a franchise for exclusive privileges. The case was appealed from the Circuit Court of Harrison County. The Clarksburg Electric Light Company had obtained an injunction restricting the Traders' Annex Company, which had been chartered for the purpose of furnishing electric light in a hotel opera house and bank building run by it and to certain private parties, from carrying out its intention, alleging that in December, 1887, it had obtained an exclusive franchise to furnish light, water and other improvements. The injunction was later dissolved by the Circuit Court, whereupon an appeal was taken to the Supreme Court.

General Items.

In line with enterprising towns, LeRoy, N. Y., is to have voting machines. The town board met recently and decided to buy two machines of the Standard Voting Machine Co., of Rochester. The cost of the machines will be $500 each and will be paid for at the end of five years if they prove satisfactory.

It is thought that the saving on the election expenses under the old way will pay for the machines within five years. The machines will be delivered in September and used for the first time at the fall election.

* * *

The committee appointed by the town board of Irvington, N. Y., to select a voting machine has decided to use the United States machine made in Jamestown, N. Y., on election day. There will be more candidates than usual in the field and no end of "scratching tickets," but the machanism is so simple and complete that no trouble will be experienced in recording the wishes of the people.

* * *

The Council of Hazleton, Pa., has decided to use both electric and gas lights. The former will be furnished by the Hazleton Electric Company and the latter by the Wellsbach company.

—A Supreme Court jury has awarded a lady damages against the Nassau Railroad Co., of Brooklyn, N. Y., to the amount of $2,300, for being heavily sat upon by a "very fat man." It appears that the accident happened as a result of the sudden stopping of a car, for which the railroad company is held liable.

—The United States Supreme Court has decided the case of Gundling against the city of Chicago, involving the validity of the anti-cigarette ordinance of that city. The ordinance was attacked as unconstitutional. The opinion was handed down by Justice Peckham, and held the ordinance not to be unconstitutional. Gundling was convicted in police court of violating the city ordinance forbidding the sale of cigarettes without a license, and was fined $50. The case was appealed to the state Supreme Court and was there decided against Gundling. He then brought the case to the Supreme Court.

MUNICIPAL ASSOCIATIONS.

A Suggestion to the League.

The programs of all three annual meetings of the League of American Municipalities have been too narrow in their scope. There have been too many papers upon a single theme. None of them, however, have lacked merit, but it has given too much prominence to one subject to the exclusion of others of equal importance. For example, thirteen of the twenty-two papers and addresses given at the Syracuse convention were upon the general subject of "municipal ownership,"—more than half of the total number. But six subjects in all were touched upon. Judging from the proceedings of the League it would seem as though there were no unsolved problems to settle in the Police, Fire, Health, Park, Finance and Street Cleaning departments as well as other matters which at some time should receive consideration at the hands of so important an organization. "City Government" would, therefore, suggest that a more evenly balanced and diversified program should be prepared for the next annual gathering.

Other suggestions of equal importance will be found in the following rules, long in successful operation by the American Society of Mechanical Engineers

"I. All papers to claim presentation at any convention must be in type three weeks in advance of meeting.

"II When the secretary sends notice of the meeting, he shall also send a blank by which the members may notify him of their intention to be present at it.

"III. Copies of all the papers to be read shall be sent to every member so signifying his intention to attend. A blank shall accompany this packet of papers, by which the members may signify their intention to discuss any of the papers and priority in debate shall be given in the order of the receipt of such notifications.

"IV. At the convention papers shall be read by abstract only, not more than ten minutes being allowed to the presentation. It is assumed that every one has made himself familiar with the papers beforehand.

"V. Members who have given notice of their intention to discuss any papers, and shall have reduced their remarks to writing, shall be entitled to ten minutes for their presentation; extemporaneous discussion from one person is limited to five minutes at any one time.

"VI. A member who has once had the floor cannot claim it again until all the others have been heard who desire to speak on that paper.

"VII. Members unable to attend a meeting may send discussion in writing of any paper, such discussion to be presented under the previous rules.

"VIII. Authors may have the last five minutes of the time allotted for a paper and discussion to close the debate.

"IX. The time available for papers at every meeting shall be so allotted to the several papers as to secure a favorable presentation of them all. At the expiration of the allotted time the debate on any paper shall be closed and the next paper shall be taken up. Any curtailed discussion may be resumed in order, if time is available after presentation of the last paper on the docket.

"X. These rules may be suspended in any session by unanimous consent. Their whole object and tenor is to favor well considered discussion by giving all available time for it, and a chance for every paper."

Juvenile Municipal Organization.

The City Improvement Society of Lincoln, Neb., whose members are women, has formulated a novel plan for enlisting the services of the children in the public schools in keeping the streets clean and in other minor details.

The Capitol school is the only one where the plan is already in successful operation. There the children of each grade are organized separately and choose their own officers, as follows: A Mayor, paper police, a lookout committee, wiremen, broom brigade with captain, and sidewalk inspectors.

The question of obtaining hammers and nails was discussed by the ladies in charge, and also the right of the children to repair the sidewalks for property owners. The ladies agreed that the example of the children would accomplish more than the actual work performed. When parents see their boys and girls trying to pick up paper and trash, they will want to help in the efforts toward neatness.

A Lively Organization.

A little leaflet has been published by the Municipal League, entitled "Was It Worth While?" relating to the February election. It contains quotations from a number of prominent papers of the country showing that the work of the League is appreciated elsewhere as indicating substantial progress of the municipal reform movement in this city. The introductory page of this leaflet is pertinent and suggestive, and reads as follows

"The Municipal League has always held that the believers in dishonest elections and corrupt government are really an insignificant fraction of the voters of Philadelphia. The people who belive that good government pays are an overwhelming majority when they are reached and aroused. The election in February brought out only a small part of them; yet see what they accomplished:

"1. They elected three honest magistrates, who had been 'slated' for defeat.

"2. They proved that the much-feared Republican-Democratic machine, like all rotten constructions, is really very weak. This was a little fight, but it made a big hole in the plans of the machine. What will happen when the 125,000 voters who stayed at home this time are brought to the polls?

"3. They showed that some day Philadelphia may hope to see an honest election (something none of us can now remember), and they showed that the League as an independent minority municipal party is here to stay.

"4. They gave renewed hope to the friends of honest municipal government everywhere. The results of the February election are of no mere local interest; they have been quoted all over the country."—"City and State."

To Improve Their City.

Last June, a number of citizens of Hamilton, Ont., organized the Hamilton City Improvement Society for the purpose of promoting the improvement, cleanliness, and beautifying of that city, and to assist and stimulate the authorities in enforcing the laws relating thereto. R. Tasker Steele, of Lucas, Steele & Bristol, was elected President of the society. That the society is determined to make its influence felt is evident, for, with the opening of spring, it is reaching out to secure the co-operation of Hamilton citizens in the attempt to make the city more attractive. They have issued a small booklet containing the city by-laws relating to the streets and parks, etc.; also useful hints to young people, lists of police stations and the fire alarm boxes.

This society should receive hearty support from every business man and citizen of Hamilton. It would be a good thing if every municipality in America boasted an organization with aims similar to this one.

Smoke Causes Damage.

A suit was recently commenced in the Equity Term of the Supreme Court of New York State, by Robert K. Root of Buffalo, against the proprietor of an apartment house. In this suit Mr. Root seeks to recover $10,000 damages he alleges he has sustained by reason of the smoke, soot and acid from the chimney of the Lenox apartment house in North Street. Mr. Root claims the interior woodwork of his handsome residence at North Street and Delaware Avenue has been damaged to the amount of $1,000.

His complaint also sets forth that washing, if left on the line over night, is damaged. He cites the alleged fact that the escaping acid from the chimney of the Lenox has eaten holes in delicate laces and lingerie and destroyed it times without number. Other residents in the vicinity of the apartment house substantiate these declarations.

Mr. Williams, who owns the handsome marble building on the opposite corner from Mr. Root's house, says he has been obliged to have his home repainted as a result of the smoking it received from the obnoxious chimney. He claims his property is being damaged continually.

Franchise Tax Law Constitutional.

Justice Kenefick, sitting in special term of the Supreme Court, has handed down a decision in the proceedings brought by five corporations in the city of Buffalo to test the constitutionality of the Ford franchise tax law and restrain the local board of assessors from assessing their franchises under the law.

The justice decides that the law is constitutional and upholds the action of the State board of Tax Commissioners in directing the local board of assessors to assess the franchises.

The demurrers entered by Corporation Counsel Cuddeback on behalf of the assessors, to the complaints in the actions brought by the Buffalo Gas Co., and the Buffalo Creek Railway Co., are sustained.

The temporary injunctions obtained by the Erie Railroad Company, the New York Central and the Cataract Power and Conduit Company, to restrain the assessors from assessing their franchises, are vacated.

Assessments aggregating $13,000,000 are affected by the decision and will be placed on the rolls.

It is expected the corporations will appeal from the decision to the Appellate Division and then to the Court of Appeals.

PERIODICALS.

Articles of interest to city officials and municipal students appearing in current and recent periodicals, American and English.

RAPID TRANSIT IN NEW YORK. Illustrated. By William Barclay Parsons. Scribner's Magazine, May.

EXPENSIVE CITY IN THE WORLD. THE MOST—By Hon. Bird S. Coler. Popular Science Monthly, May.

NATIONAL ZOO AT WASHINGTON. THE —Illustrated. (Concluding paper.) By Ernest Seton-Thompson. Century Magazine, May.

BRIDGES. ART IN MODERN—Illustrated. By Montgomery Schuyler. Century Magazine, May.

TREES AND PARKS IN CITIES. A PLEA FOR—By Louis Windmiiller. The Forum, May.

PUBLIC EMPLOYMENT OFFICES IN THE U. S. AND GERMANY. By E. L. Bogart. Quarterly Journal of Economics, May.

HOUSING PROBLEM IN GREAT CITIES. THE—By E. R. L. Gould. Quarterly Journal of Economics, May.

BOOKS REVIEWED.

MUNICIPAL GOVERNMENT. By Hon. Bird S. Coler. 12mo., pp. 200. $1.00.

In a terse and forceible manner the author speaks of his experience with New York's new charter. Although Mr. Coler's official life has been comparatively brief, yet he shows a most thorough knowledge of his subject as illustrated by the machinery of Greater New York. His observations upon the faults and needs of the present charter are so clearly put as to convince the reader that he is right—in most instances at least. The chapters on "Public Charity" and "Charity Regulated" should be widely read. Indeed, there is not an uninteresting page in the whole book. It will interest every student of sociology.

A MUNICIPAL PROGRAM. Report of a Committee of the National Municipal League. 8vo., pp. 280. $1.00.

This report completes the work commenced in 1897. It is the product of theorists; but the best informed set of reformers in the United States. Most of them have had but little or no real experience in the conduct of city affairs, and are too busy to give up enough of their valuable time to the discharge of the petty drudgery of the average mayor, councilman or other city official in order to learn. Notwithstanding this lack of familiarity with the practical details of the subject, the "Municipal Program" contains the most valuable fund of principles and information relating to municipal government that has ever been published in America. Every city and student of civic affairs should read it and own a copy.

THE CHEMISTRY OF FIRE AND FIRE PREVENTION. Illustrated. By Herbert Ingle, F. I. C., F. C. S., and Harry Ingle, Ph. D., B. Sc. 12mo., pp. 287. $2.50.

This is a most valuable handbook for insurance surveyors, works managers, and all interested in fire risks and their diminution. It treats of the subject as an exact science, technical in form, and yet, contains a vast amount of information with which the fire commissioners and chiefs in all our large cities should be familiar. Fire fighting, as a science, is still in its infancy, and we cannot expect rapid advancement, unless those interested avail themselves more frequently than they do, of the aid of such books as this.

THE ILLINOIS MUNICIPAL DIRECTORY FOR 1900. Published by E. B. Warriner, Kankakee, Ill. Pamphlet, pp. 36. Price, $1.00. It contains the names of the mayor, city attorney, clerk and chiefs of the police and fire departments of 648 cities, towns and villages. The list includes about 2,000 city officials.

The City for the People.

In "The City for the People," the benefits of public ownership, home-rule for cities, direct legislation, the merit system of civil service, proportional representation, the automatic ballot, preferential voting, effective corrupt practices acts and other means of overcoming political corruption are treated with the clearness, force and analytical power that characterizes Professor Parsons' writings. We heartily commend the book to all who are interested in the best progressive thought. 600 pages. Price, paper, 50c.; cloth, $1. Address "Equity Series," 1,520 Chestnut st., Philadelphia, Pa.

RECENT INVENTIONS.

SPECIALLY REPORTED FOR "CITY GOVERNMENT," BY ARTHUR M. HOOD, ATTORNEY, INDIANAPOLIS, IND.

No. 645,689. March 20, 1900. Drawbridge. Albert Lucuis, New York, N. Y. An ingenious vertically elastic turn-table or pivot for swing-bridges.

No. 645,751. March 20, 1900. Apparatus for Purifying Sewers. Jared E. Lewis, Philadelphia, Pa. A tilting reservoir is provided which, when it has become filled, automatically discharges the water therein into a sewer so as to flush the same.

No. 645,916. March 20, 1900. Snow Melting Machine. Charles P. Gentler & C. J. Power, Matteawan, N. Y., assignor of two-thirds to John L. Hall, same place. A cart having an adjustable burner platform by means of which snow on the streets may be melted.

No. 645,991. March 27, 1900. Drawbridge Gate. Henry W. Yerrington, Oceanic, N. J.

No. 646,010. March 27, 1900. Bag-carrying Cart. Jay B. Rhodes, Harvey, Ill., assignor to Frederick C. Austin, Chicago, Ill. A small hand cart for carrying bags for the use of street sweepers.

No. 646,624. April 3, 1900. Street Sweeper. Hosea W. Libbey, Boston, Mass. A machine sweeper particularly designed to be driven by connection with the trolley wires of street cars. The main body of the machine is circular in cross certion and is provided with an endless belt of buckets into which the dirt is thrown by rotary brushes.

No. 646,715. April 3, 1900. Apparatus for Refining Garbage-grease. Bruno Terne, Philadelphia, Pa.

Nos. 646,927, 646,928, 646,929. April 3, 1900. Apparatus for Treating Sewage. Donald Cameron, F. J. Commin and Arthur J. Martin, Exerton, England. The purpose of these three devices is to provide means by which the flow of sewage into tidal waters may be automatically stopped during the flow of the tide and permitted during the ebb.

No. 646,964. April 10, 1900. Process of and Apparatus for Constructing Fireproof Floors. Phillipp Esch, Frankfort-on-the-Main, Germany. Wooden beams are used and covered with concrete. The space between the beams is also filled with concrete of a cellular form, the openings being formed by means of a telescoping tubing or series of tubes which may be withdrawn when the concrete has set.

No. 647,282. April 10, 1900. Sewer Excavating and Filling Machine. Wm. Shannon, Cleveland, Ohio, assignor of forty-nine one-hundredths to John McMyler and Edmund F. Atherton, same place. The apparatus is mounted upon a track which extends along the proposed route for the sewer, and after the initial excavation, the dirt from succeeding portions is carried back automatically and used to fill that portion of the trench in which the sewer has been completed.

No. 647,395. April 10, 1900. Street Gutter Cleaning Machine. Robert W. Furnas, Indianapolis, Ind. In machines for sweeping the streets great trouble has been found in properly cleaning the gutters. By means of the present machine, a small circular brush rotates upon an axis almost vertically but slightly tipped so that the edge only of the brush comes into action. By this means the brush may be carried into the corner of the gutter and the dirt therein thrown out toward the middle of the street.

No. 647,396. April 10, 1900. Hand Street Cleaning Machine. Robert W. Furnas, Indianapolis, Ind. A hand scraper which is supported by a single wheel so that it may be easily trundled along the street. This device has been used for some time with considerable success in cleaning the streets in Indianapolis.

No. 647,432. April 10, 1900. Apparatus for Burning Garbage or other Refuse Matter. Charles T. Whedon, Whitefield, N. H., assignor of one-half to Charles H. Whedon, same place. The refuse is fed into the furnace through a vertical feed-pipe, which is surrounded by the uprising heated gases, and drops upon a horizontally rotating grate section which operates to feed the material radially toward and onto a stationary grate section which surrounds the rotating portion.

No. 647,437. April 10, 1900. Voting Machine. John Boma, Rochester, N. Y., assignor of one-half to Charles A. Webster, same place. This machine is especially designed to enable the voter to retract his vote and revote at any time prior to issuing from the booth.

No. 647,588. Combined Telephone and Electrothermostatic Fire-alarm System. Geo. K. Thompson, Malden, Mass., assignor to the American Bell Telephone Co., Boston, Mass. Combined with the usual telephone service is a mechanism which, upon the rising of temperature to the danger point, as in case of fire, will automatically send in a fire alarm to the central station.

No. 647,780. April 17, 1900. Filtering Apparatus. Wm. W. Wilson, Holyoke, Mass. In this apparatus there is a common supply canal beneath which there is a receiver for the filtered water. Between the levels of these two, and upon each side of the supply canal, is a series of filtering beds which discharge into the receiving chamber.

No. 647,850. April 17, 1900. Hand Street Sweeping Cart. George S. Lee, Hawthorne, N. J., assignor to Fred W. Wentworth, Paterson, N. J. A street scraping hand cart in which the scraper receptacle is so connected to the handle as to be easily raised and tipped so as to prevent the contents being accidently discharged.

No. 648,128. April 24, 1900. System for Laying Supply-pipes. David Y. Kinniburgh, New York, N. Y. The system consists in surrounding supply pipes, leading from the main line to houses, by a larger pipe and placing in the supply pipe two couplings, one accessible from the building and the other accessible from an opening in the street.

No. 648,255. April 26, 1900. Fire Hose Nozzle. Arthur W. Haines, Lorain, Ohio. The flow of water from the nozzle may be thrown into a spray or entirely stopped by means of a pair of peculiar valves.

No. 648,279. April 26, 1900. Means for Handling Refuse. James McCartney, New York, N. Y. Helen McCartney, executrix of said James McCartney, deceased. A receiving house is built over the water so as to form a passage way through it for garbage scows and having suitable dumping platforms arranged over the scow passage.

No. 648,325. April 24, 1900. Apparatus for Automatically Filling and Discharging Filter Beds. Samuel H. Adams, Horragate, England. A peculiar arrangement of siphons and seals mounted in and forming connections between a series of adjacent but otherwise non-connected filter beds.

No. 648,367. April 24, 1900. Fire Alarm System and Apparatus. Richard A. Smith, Norfolk, Va.

Rushed With Orders.

The greatly increased demand for Seagrave trussed ladders, truss ladder trucks, combinations of trussed ladder trucks and chemical engines, hose wagons and chemical engines, and trussed ladder trucks with hose bodies made by the well known firm, The Seagrave Co. of Columbus, Ohio, has caused this firm to double its capacity for the United States trade while the goods for Canadian trade are being made in Canada.

Salt Lake City, Utah, has placed its order for a full trussed hook and ladder truck with The Seagrave Co. through its sales agent, Mr. R. S. Chapman of San Francisco, Cal. This hook and ladder truck is provided with the latest style of Seagrave rear steering gear.

The Columbus, Ga., Fire Department, at whose head stands that well known and efficient fire Chief, Mr. George J. Burrus, has just received from The Seagrave Co. of Columbus, Ohio, one of its mose up-to-date No. 1 City Service Hose wagons, having improved ball bearings, suitable ladder service and sundry fire fighting tools. The trussed hook and ladder truck made by the above firm having rendered such valuable service during the past nine years conclusively demonstrated the superiority of this firm's apparatus and caused the city to unhesitatingly place the order for its new wagon with The Seagrave Co.

The Up-to-Date Coupling.

The W. J. Clark Company, manufacturers of the improved fire hose couplings known as the "Quick-as-wink," report largely increased sales this spring. They say the prejudice in the minds of the average town councilman in favor of the common, old-style couplings has weakened a great deal in view of the multiplied evidence of the superiority of the "Quick-as-wink," and it is comparatively easy now to induce councils to take these improved couplings on trial. Whereever they are taken on trial a sale is sure to be the result, for they never fail to please everybody concerned.

—The United States Government has just placed an order with the New York Filter Manufacturing Company, 26 Cortland street, New York, for a large filter plant to furnish filtered water for the Experimental Model Basin in the Navy Yard, Washington, D. C.

—The O. H. Jewell Filter Co., Chicago, Ill., has just received its second order of this year from the Terre Haute Water Co. of Terre Haute, Ind., to increase the filter plant previously installed. This increased order is for filters of a capacity of 4,500,000 gallons in twenty-four hours, the original filter plant being of 4,000,000 gallons capacity in twenty-four hours. The filters are of the horizontal pressure type.

Department of Smoke Abatement.

The City of Cleveland is the first to create a department whose sole object is the abatement of the smoke nuisance. Professor Charles H. Benjamin is the supervising engineer of the new department, which was created by an act of the Legislature toward the close of the session, and he will have charge of the smoke abatement in the city. The bill was passed through the efforts of the Municipal Association and makes it mandatory upon the part of the city to create the position of supervising engineer with sufficient assistants to properly attend to the business attendant upon the abatement of smoke. It provides for a supervising engineer at a salary of $2,500, one assistant at $1,200, two at $1,000 each and a clerk at $800. The ordinance will provide for all the employees but one assistant at $1,000.

Municipal Indebtedness.

The following table gives the total bonded indebtedness, excepting that of San Francisco, California. The table was compiled at considerable expense of time and labor by Mr. H. W. Mason, Secretary of the California League of American Municipalities.

STATEMENT OF BONDED INDEBTEDNESS OF MUNICIPALITIES OF THE STATE OF CALIFORNIA

City	Amount of Official Issue	Outstanding at Present	Date of Issue	Term of Bonds	Int. Rate	For What Issued
Anaheim	$ 15,000	$ 9,750	'91	---	6%	Water Works
	7,000	6,300	'94	---	6%	City Hall, Streets
	18,000	17,100	'96	---	6%	Fire Dept. Elect. Light
Total	40,000	33,150				Water System Elect. Light
Alameda	62,000	33,000	'85	20yrs	5%	Sewers
	50,000	27,500	'90	20yrs	5%	Schools
	25,000	13,750	'90	20yrs	5%	City Hall
	25,000	13,750	'90	20yrs	5%	Elect. Light
	35,000	19,250	'90	20yrs	5%	Fire Dept.
	41,000	36,900	'94	40yrs	5%	Schools
	50,000	45,000	'94	40yrs	5%	City Hall
Total	288,000	189,150				
Auburn	20,000	-----	'94	40yrs	5%	Sewers
Azusa	21,500	-----	'00	---	6%	Water System
Berkeley	40,000	16,800	'85 '87	20yrs	5%	Sewer
	30,000	15,000	'89	20yrs	5%	Elect. Light
	50,000	32,500	'92	20yrs	5%	Schools
Total	120,000	64,300				
Benecia	30,000	24,000	'89	20yrs	6%	Water Co.
	12,000	12,000	'94	20yrs	6%	City Wharf
Total	42,000	36,000				
Belvedere	10,000	10,000	'99	40yrs	5%	Sewer
Colusa	20,000	3,500	'78	20yrs	6%	Road
Colton	12,000	6,000	'90	20yrs	7%	City Hall
	64,000	56,000	'95	40yrs	6%	Water
	6,000	5,400	'96	40yrs	6%	Light
	20,000	19,500	'99	40yrs	6%	Water
Total	102,000	86,900				
Elsinore	20,000	19,000	'97	40yrs	6%	Water
Escondido	7,400	3,500	'90	20yrs	7%	Improvements
Fresno	------	110,000	--	---	--	----------
Ferndale	12,000	12,000	'99	40yrs	5%	Sewer
Grass Valley	40,000	40,000	'99	40yrs	7%	Sewer
Healdsburg	80,000	78,000	'99	40yrs	5%	Water & Light
Hollister	35,000	33,250	'98	40yrs	6%	Sewer
Long Beach	17,750	17,750	'99	40yrs	5%	City Hall Bath-House & Park
Lompoc	12,000	6,600	'90	20yrs	7%	Water Works
Lakeport	15,400	15,400	'99	40yrs	5%	Water Works
Los Angeles	22,000	8,000	'77	---	--	Main Sewer
	200,000	110,000	'89	---	--	School Imprvt.
	369,000	208,700	'90	---	--	Sewer
	61,000	41,000	'91	---	--	Funding
	395,000	276,000	'92	---	--	Sewer Outfall
	306,000	275,000	'95	---	--	School
	40,000	36,000	'95	---	--	Police Station
	30,000	27,000	'95	---	--	Water System
	270,000	257,000	'97	---	--	Refunding
	150,000	146,000	'98	---	--	Fire Dept.
	23,000	22,000	'98	---	--	Bridge Imprvt.
	160,000	156,000	'98	---	--	Tunnel Imprvt.
	10,000	9,000	'98	---	--	Park Imprvt.
	200,000	200,000	'99	---	--	School
Total	2,236,000	1,771,700				
Lincoln	20,000	18,500	'96	20yrs	7%	Water System
Marysville	40,000	24,000	'95	10yrs	5%	Drainage System Pumping Plant Filling Street
Monrovia	40,000	20,000	'90	1yr	6%	Water Works
	40,000	35,000	'94	1yr	6%	Water Works
	25,000	24,375	'98	1yr	6%	Water Works
Total	105,000	79,375				
Modesto	60,000	39,000	'92	20yrs	6%	Water Works
	25,000	16,250	'92	20yrs	6%	Sewer System
Total	85,000	55,250				
Napa	27,000	17,550	'92	20yrs	5%	Iron Bridge
Nevada City	60,000	54,000	'97	40yrs	5%	Water Works
	28,000	28,000	'99	40yrs	5%	Sewer Bonds.
Total	88,000	82,000				
Oakland	720,000	484,000	'72	40yrs	6%	School Funded Debt
			'74	---	6%	
			'97	---	5%	
			'92	---	--	
Oceanside	15,000	7,500	'89	20yrs	7%	Water System
Ontario	12,000	7,200	'92	20yrs	6%	Water System
	9,600	8,400	'93	40yrs	6%	Sewer System
Total	21,600	15,600				
Petaluma	40,000	14,000	'86	20yrs	6%	School House City Hall Iron Bridge
Pomona	40,000	24,000	'93	10yrs	7%	School House
Pasadena	192,000	86,400	'88	20yrs	5%	Fire & Sewer
	8,500	4,675	'90	20yrs	7%	Library
Total	200,500	91,075				
Palo Alto	40,000	37,000	'96	40yrs	5%	Water Works
	40,000	39,000	'97	40yrs	5%	Sewer
Total	80,000	76,000				
Redlands	100,000	65,000	'92	20yrs	6%	Water Drains
Redwood City	35,000	24,500	'92	20yrs	6%	Sewer
Red Bluff	35,000	35,000	'99	40yrs	4%	Sewer
Riverside	90,000	81,000	'95	40yrs	5%	Streets
	40,000	36,000	'95	40yrs	5%	Elect. Light
Total	130,000	117,000				
Redding	30,000	13,500	'88	20yrs	6%	Sewer & Str.
Santa Ana	60,000	32,000	'90	20yrs	6%	Water Works
	65,000	63,375	'98	40yrs	4½%	Sewer
Total	125,000	95,375				
Stockton	195,000	35,000	'83	20yrs	6%	Refunding
	120,000	24,000	'83	20yrs	6%	Railroads
	50,000	2,000	'83	17yrs	6%	Schools
	85,000	45,750	'90	20yrs	5%	Sewers
	35,000	19,250	'90	20yrs	5%	Water System
	25,000	13,750	'90	20yrs	5%	Bridges
	50,000	27,500	'90	20yrs	5%	Public Square
	40,000	22,000	'90	20yrs	5%	Water Front
Total	600,000	190,250				
San Jose	500,000	175,000	'87	20yrs	5%	Improvements
	75,000	71,250	'97	40yrs	4½%	School
	40,000	38,000	'97	40yrs	4½%	Sewer
Total	615,000	284,250				
Sacramento	1,300,000	136,300	'63	40yrs	6% 5%	Improvements
San Diego	80,000	32,000	'87	20yrs	5%	School Imprvts.
	260,000	247,000	'96	40yrs	4½%	Refunding
Total	340,000	279,000				
San Leandro	18,000	15,750	'93	40yrs	6%	Sewer
San Bernardino	160,000	80,000	'90	20yrs	6%	Water Works
Santa Cruz	30,000	12,000	'87	20yrs	5%	Sewer
	5,000	2,000	'87	20yrs	5%	Elect. Light
	5,000	2,000	'87	20yrs	5%	Bridges
	20,000	8,000	'87	20yrs	5%	Cliff Drive
	300,000	135,000	'89	20yrs	5%	Water Works
Total	360,000	159,000				
San Mateo	40,000	36,000	'95	40yrs	6%	Sewers
Santa Barbara	19,000	11,400	'91	20yrs	5%	Sewer
	70,000	45,500	'93	20yrs	5%	Boulevard
Total	89,000	56,900				
San Jacinto	37,625	37,625	'95	40yrs	6%	Water Works
Suisun	42,000	39,900	'97	40yrs	6%	Water Works
Santa Monica	40,000	38,000	'97	40yrs	6%	Sewer
Santa Rosa	165,000	140,250	'95	40yrs	4%	Water Works
Salinas	15,000	6,000	'88	1yr	5%	Streets
	10,000	4,000	'88	1yr	5%	School
	40,000	37,000	'97	1yr	5%	Sewer
	30,000	29,000	'99	1yr	5%	School
Total	95,000	76,000				
San Rafael	25,000	16,250	'92	20yrs	5%	Sewer
	26,000	25,350	'98	40yrs	5%	Sewer
Total	51,000	41,600				
Santa Clara	60,000	54,000	'95	40yrs	5%	Water Works
San Luisobisp	116,000	116,000	'99	40yrs	5%	Water & Sewer
Ukiah	25,000	23,125	'98	40yrs	5%	Sewer
Vallejo	250,000	162,500	'93	20yrs	6%	Water
	32,000	28,800	'95	40yrs	5%	Refunding
Total	282,000	191,300				
Ventura	20,000	8,000	'89	1yr	5%	Sewer
	15,000	6,750	'89	1yr	5%	Improvements
Total	35,000	14,750				
Visalia	12,000	6,000	--	---	6%	Improvements
	25,000	18,000	--	---	6%	School
	10,000	9,000	--	---	6%	School
Total	47,000	33,000				
Whittier	40,000	39,000	'99	40yrs	5%	Water Works
Woodland	78,000	78,000	'99	40yrs	5%	Sewer & Water
Watsonville	40,000	39,000	'99	40yrs	5%	Sewer
Yreka	5,000	2,700	'90	20yrs	7%	Streets
Total	9,786,775	6,077,125				

The Tenement House Commission.

Government Roosevelt has appointed sixteen gentlemen to serve on this important commission, ignoring party and church lines. The men were selected with particular reference to their fitness and adaptation, combining the best talent procurable within reach of the problem to be considered. "It seems to us," says a recent editorial in the New York "Times," "that the Governor has done his work very well indeed. His commission contains architects, builders, lawyers who have paid special attention to the question involved, physicians, representatives of tenants of tenement houses, representatives of the owners of reformed tenement houses who have managed to make such buildings pay. In fact, there is no kind of knowledge applicable to the subject which the commission cannot draw upon without going outside of its own membership. Something really practical, really valuable, ought to come out of the deliberations of this body. If it succeeds in securing the enactment and enforcement of regulations which shall, even slowly and gradually, make the New York tenement house a fitter place for human habitation than it has been heretofore, it and its creator will deserve the hearty thanks of the whole community."

New York Charter Revisers.

"The Charter Revision Commission, judged by individual character and demonstrated capacity," says the "Mail and Express," is wholly admirable. The absence of any Tammany man in its membership is, we cannot doubt, due to the plain business proposition that it would not be wise to name, for revision, members of an organization notoriously opposed to revision—an organization, moreover, whose policies in government are responsible for the necessity of revision in certain important direction. Every man should be—as every man now is—in sympathy with the intent of the law creating the commission. With so admirably balanced a body, we are warranted in looking forward to prompt, intelligent and thorough work, free from the taint of partisan prejudice and above the reproach of political influence or personal interest."

The personnel of the commission follows

George L. Rives, lawyer, formerly Assistant Secretary of State under President Cleveland; Charles C. Beaman, lawyer; Franklin Bartlett, lawyer, former Congressman; Henry W. Tafft, lawyer; John D. Crimmins, contractor, former Park Commissioner and a member of the Constitutional Convention; Prof. Frank J. Goodnow, professor of administrative law in Columbia University; Edgar J. Levey, Deputy Comptroller of the city of New York; Alexander T. Mason, lawyer; Hon. Charles A. Schieren, former Mayor Brooklyn; James McKean, lawyer, and President of the Hamilton Club; Isaac M. Kapper, lawyer, formerly Assistant District Attorney under Judge Marean; William C. Dewitt, lawyer and member of the commission which drafted the Greater New York charter; Hon. James L. Wells, former Alderman and former Member of Assembly, and conspicuously identified with the interests of upper New York city; George W. Davis, lawyer and former District Attorney of Queens County; Hon. George G. Cromwell, lawyer and former Member of Assembly and President of the Borough of Richmond.

Alderman Patterson of Chicago proposes that the city use the street railway line for the transportation of garbage by trolly car to the various dumps.

The Manhattan Elevated Railway Company of New York, is said to be considering a plan to provide its stations with incline elevators, and is reported to have asked for estimates for the cost of constructing one hundred such elevators. The inclined elevator will have the same general appearance as the ordinary elevated railway stairway, except that the slope will not be as steep and will be a straight run from top to bottom, with no landings. One-half of the structure will have steps for going down, the other half will have a moving incline, running at a speed of ninety feet per minute. The proposed elevators will have a carrying capacity of three thousand passengers each per hour. The inclined elevators will be run on the endless chain principle and the power will be furnished by electric motors placed in the stations.—"Street Railway Journal."

The Richmond Convention.

The twentieth annual convention of the American Water Works Association promises a rich feast for those interested in the water problems of our American cities. The following well known gentlemen have prepared papers to present to the convention, at Richmond, Va., May 15-18, inclusive:

C. D. Wiles, Superintendent of Water Works, Delaware, O.; W. M. Kimball, Superintendent of Water Works, Rockford, Ill.; S. A. Charles, Superintendent of Water Works, Lexington, Ky.; E. B. Weston, C. E., Providence, R. I.; D. H. Maury, Consulting Engineer Water Works, Peoria, Ill.; J. H. Trautwine, Jr., C. E., Philadelphia, Pa.; F. A. W. Davis, Vice-President of Water Works Company, Indianapolis, Ind.; J. B. Heim, Superintendent of Water Works, Madison, Wis.; Charles E. Bolling, Superintendent of Water Works, Richmond, Va.; Professor Levy, Richmond College, Richmond, Va.; J. N. Hooper, Vice-President of Water Works Company, Davenport, Ia.; Dow. R. Gwinn, Superintendent of Water Works, Quincy, Ill.; A. A. McKew, Superintendent of Water Works, Memphis, Tenn.; D. W. French, Superintendent of Hackensack Water Company, Hoboken, N. J.; C. Monjeau, Hydraulic Engineer, Middletown, O.; Dr. Ulrich, Water Commissioner, Wheeling, W. Va.

The Anti-Barren Island Nuisance Bill has been signed by Governor Roosevelt. This bill provides that the offensive trades carried on within the limits of Barren Island shall be discontinued inside of a year. This means that New York city will have to seek some other method of disposing of its garbage.

A New Telephone System.

In the presence of a small party of capitalists a demonstration was made at Freeport, L. I., of what is known as the Smith-Vassar telephone system, which is now in operation there over a small circuit, with about twenty subscribers. The advantage of this system lies in the limited number of wires required. In the system now generally in use two wires are run from the central office to each subscriber—that is, of course, where complete metallic circuits are used—so that in a section of 100 subscribers 200 wires are necessary. By means of the new system, it is said by the inventor, forty wires at most will accommodate all the 100 subscribers, and at the same time give them more prompt and absolutely secret communication.

Fourteen of the forty wires, for instance, are devoted to a selective calling device, whereby the "central" operator can select and call any one of the 100 subscribers on her particular section without disturbing any one of the other subscribers thereon. The remainder of the forty wires on such a section would be used exclusively for telephoning purposes. The number of such telephoning wires may be made more or less, in accordance with the business needs of each particular section.

A subscriber wishing to establish telephonic connection with any other subscriber merely takes down his receiver from its hook. By this operation he automatically and promptly selects the first pair of the ten pairs of wires which happen at such moment to be idle, and by so selecting this pair of idle wires he secures them absolutely for his own operation, and at the same time, by this action, calls or signals the central operator, in no manner, however, interfering with the other wires.

Should nine out of ten pairs of wires be in use by the other subscribers, which would be unusual, the connection for the particular subscribers would be over the tenth, or idle, pair. The "central" operator, seeing the signal, and learning the desired connection (say in the same section) calls, over the calling wires, the party desired, who, when he answers the call, automatically selects the next idle pair of telephoning wires, and the two are at once in absolute secret telephoning communication. When two subscribers have finished conversation and replaced their receiving 'phones upon their hooks, the pair of wires which they have used become instantly idle and adapted to be instantly secured by any other party desiring to establish communication. In this way it is asserted that the system effects a saving of from 40 to 80 per cent. in construction and maintenance over the prevailing system.—"Electricity," N. Y.